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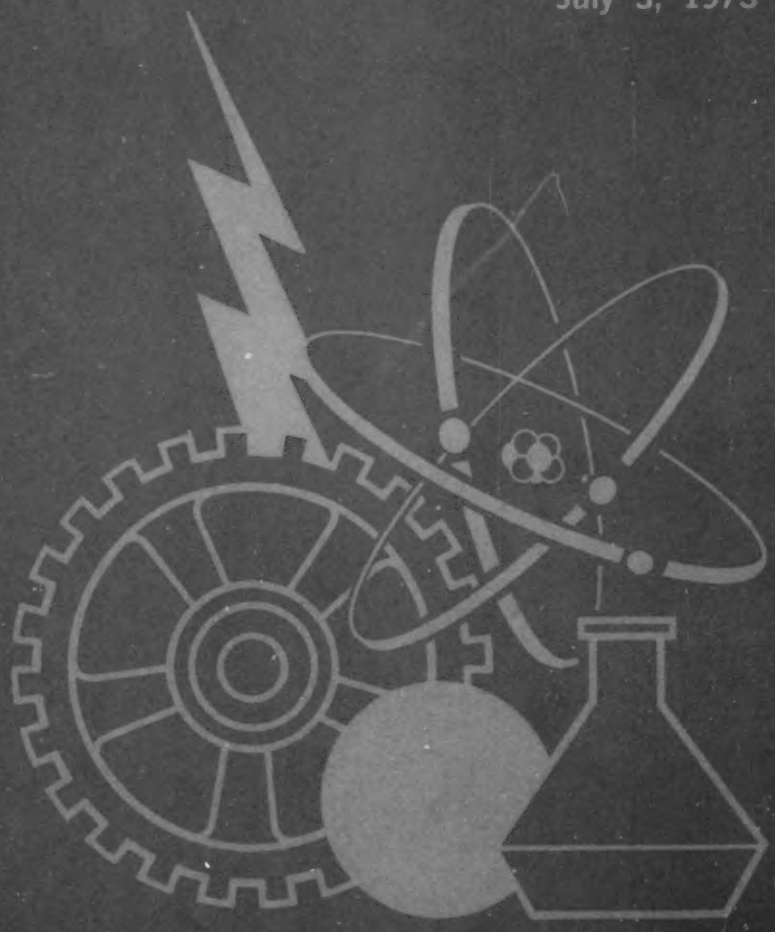

U. S. DEPARTMENT OF COMMERCE

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July 3, 1973 Volume 912 Number 1

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PATENT NOTICES

Certificates of Correction for the Week of July 3, 1973

P.P. 3,306	3,684,802	3,708,408	3,715,178
3,514,499	3,685,342	3,708,577	3,715,238
3,553,330	3,686,222	3,708,885	3,715,337
3,555,109	3,691,518	3,709,997	3,715,537
3,558,153	3,692,707	3,710,140	3,715,695
3,561,003	3,692,827	3,711,270	3,715,796
3,572,679	3,693,644	3,711,339	3,715,821
3,579,484	3,695,853	3,711,411	3,715,866
3,598,422	3,696,113	3,711,488	3,716,063
3,602,841	3,696,153	3,712,458	3,716,066
3,607,686	3,696,462	3,712,548	3,716,078
3,607,804	3,698,521	3,712,610	3,716,087
3,607,897	3,698,535	3,712,921	3,716,098
3,617,591	3,698,584	3,713,207	3,716,126
3,619,218	3,699,008	3,713,504	3,716,488
3,621,062	3,699,674	3,713,868	3,716,523
3,636,108	3,700,093	3,713,974	3,716,538
3,640,781	3,700,676	3,713,994	3,716,576
3,642,650	3,701,297	3,713,996	3,716,806
3,659,552	3,702,035	3,714,043	3,716,837
3,660,385	3,703,042	3,714,064	3,717,275
3,660,408	3,704,911	3,714,078	3,717,399
3,661,897	3,705,686	3,714,123	3,717,445
3,667,421	3,706,344	3,714,140	3,717,579
3,668,274	3,706,478	3,714,188	3,717,674
3,676,467	3,707,219	3,714,192	3,717,763
3,679,849	3,707,423	3,714,291	3,717,814
3,681,060	3,707,538	3,714,326	3,718,203
3,681,490	3,708,274	3,714,327	3,718,346
3,681,783	3,708,290	3,714,400	3,718,692
3,684,463	3,708,319	3,715,021	3,719,312

Erratum

All reference to Patent Number 3,738,875 to Wesley Kalita, Stainless Steel of Improved Ductility, appearing in the OFFICIAL GAZETTE of June 12, 1973, should be deleted as the application inadvertently issued.

Dedications

2,971,110.—*Kurt Schmidt*, Cleveland, Ohio. METAL VAPOR LAMPS. Patent dated Feb. 7, 1961. Dedication filed Mar. 12, 1973, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the entire term of said patent.

3,467,929.—*Charles E. Derbyshire, Robert D. Mees*, and *Armin F. Mittermaier*, Fort Wayne, Ind. DRY TYPE TRANSFORMER AND IMPROVED ENCLOSURE ASSEMBLY THEREFOR. Patent dated Sept. 16, 1969. Dedication filed Sept. 22, 1971, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the above-identified patent.

3,515,087.—*Robert B. Stuart*, Penn Yan, N.Y. PLANING BOAT. Patent dated June 2, 1970. Dedication filed Mar. 30, 1973, by the assignee, *Penn Yan Boats, Incorporated*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,698,114.—*Stanley Hirsch* and *Irving Schneider*, Westbury, N.Y. FRAME CONSTRUCTION. Patent dated Oct. 17, 1972. Dedication filed Mar. 26, 1973, by the assignee, *Structural Industries, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,050,699.—*Enrique A. J. Marcatili*, Fair Haven, and *Douglas H. Ring*, Red Bank, N.J. MILLIMETER WAVE HYBRID JUNCTION. Patent dated Aug. 21, 1962. Disclaimer filed Mar. 28, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to all claims of said patent.

3,377,619.—*Elliott R. Marsh*, Endicott, and *Albert A. Magdall* and *Francis R. Rausch*, Vestal, N.Y. DATA MULTIPLEXING SYSTEM. Patent dated Apr. 9, 1968. Disclaimer filed Feb. 12, 1973, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claim 7 of said patent.

3,386,353.—*Gorden S. Wells*, Binghamton, N.Y. VIBRATORY COMPACTING MACHINES. Patent dated June 4, 1968. Disclaimer filed Feb. 12, 1973, by the assignee, *Stow Manufacturing Co.*

Hereby enters this disclaimer to claims 10 through 13, inclusive, of said patent.

3,416,507.—*Arthur J. Little*, Springfield, Ill. ETHER INJECTION ASSEMBLY FOR INTERNAL COMBUSTION ENGINE. Patent dated Dec. 17, 1968. Disclaimer filed Apr. 2, 1973, by the assignee, *Stewart-Warner Corporation*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,419,896.—*Richard A. Duncan*, Lafayette, La. SUGAR CANE HARVESTER. Patent dated Dec. 31, 1968. Disclaimer filed Apr. 11, 1973, by the assignee, *The Thomson Machinery Company, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,482,644.—*Herbert B. Krieger*, Port Jefferson Station, and *Kenneth A. Wilson*, Locust Valley, N.Y. STEERING CONTROL SYSTEM FOR UNMANNED VEHICLES. Patent dated Dec. 9, 1969. Disclaimer filed Mar. 26, 1973, by the assignee, *Clark Equipment Company*.

Hereby enters this disclaimer to claim 6 of said patent.

3,607,625.—*Lester M. Hill*, Beloit, Wis., *Joseph D. Parker*, Roscoe, and *Richard E. Hergert*, Rockton, Ill. HEADBOX. Patent dated Sept. 21, 1971. Disclaimer filed Apr. 30, 1973, by the assignee, *Beloit Corporation*.

Hereby enters this disclaimer to claims 1 and 12 of said patent.

3,612,590.—*John Andreini*, Irvington, N.J., *Edwin Harley Borchard*, and *Karl-Heinz Pohl*, Boulder Colo., and *Joseph Anthony Puccio*, East Brunswick, N.J. QUICK-MOUNTING HARDWARE. Patent dated Oct. 12, 1971. Disclaimer filed Mar. 8, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to claims 1, 2, 3 and 10 of said patent.

3,639,785.—*Hiro Moriyasu*, Portland, Oreg. PULSE GENERATOR. Patent dated Feb. 1, 1972. Disclaimer filed Apr. 16, 1973, by the assignee, *Tektronix, Inc.*

Hereby enters this disclaimer to claim 9 of said patent.

3,654,023.—*Lawrence M. Rheingold*, Baldwin, and *Milton Berlin*, Forest Hills, N.Y. MECHANOCHEMICAL SHEET METAL BLANKING SYSTEM. Patent dated Apr. 4, 1972. Disclaimer filed Feb. 7, 1973, by the assignee, *The Alumet Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 16, 1988.

3,658,505.—*Gerald E. Kunkle*, New Kensington, Pa. GLASS MELTING FURNACE. Patent dated Apr. 25, 1972. Disclaimer filed Apr. 13, 1973, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,668,728.—*Jacob S. Kamborian*, West Newton, *Wladyslaw Typrowicz*, Belmont, and *Gordon S. Anderson*, Framingham, Mass. MACHINE FOR DISASSEMBLING A SHOE FROM A LAST. Patent dated June 13, 1972. Disclaimer filed Mar. 23, 1973, by the assignee, *Jacob S. Kamborian*.

Hereby enters this disclaimer to claim 15 of said patent.

3,690,867.—*Jaroslaw George Sibakin*, Ancaster, Ontario, and *Gordon Alan Roeder*, and *Paul Henry Heathcote Hookings*, Burlington, Ontario, Canada. ELECTRIC-ARC STEELMAKING. Patent dated Sept. 12, 1972. Disclaimer filed Feb. 22, 1973, by the assignees, *The Steel Company of Canada, Limited, and Metallgesellschaft A.G.*

Hereby disclaim the portion of the term of the patent subsequent to Oct. 14, 1986.

3,703,901.—*Vello Norman*, Chapel Hill, and *Thomas B. Williams, Andrew G. Kallianos*, and *James D. Mold*, Durham, N.C. TOBACCO COMPOSITION. Patent dated Nov. 28, 1972. Disclaimer filed May 12, 1972, by the inventors, the assignee, *Liggett & Myers Incorporated*, consenting.

Hereby disclaim the portion of the term of the patent subsequent to Mar. 23, 1988.

National Technical Information Service

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 194,963. Method for Detecting and Monitoring a Fuel Element Failure in a Nuclear Reactor. Filed Nov. 2, 1971. PC $3/MF $1.45.

Patent application 164,431. Technetium Labeling. Filed July 20, 1971. PC $3/MF $0.95.

Patent application 180,354. Compact Dialyzer. Filed Sept. 14, 1971. PC $3.50/MF $1.45.

Patent application 203,747. Gas Leak Valve. Filed Dec. 1, 1971. PC $3/MW $1.45.

Patent application 243,786. Tissue Collector. Filed Apr. 13, 1972. PC $3/MF $1.45.

Patent application 256,233. Technetium Bone Scanning Medium. Filed May 24, 1972. PC $3/MF $1.45.

Patent application 807,083. Method of Secretly Marking a Surface. Filed Mar. 3, 1969. PC $3/MF $1.45.

Patent application 200,840. Cross-Flow Filtration Process for Removal of Total Organic Carbon and Phosphates From Aqueous Sewage Effluents. Filed Nov. 22, 1971. PC $3/MF $0.95.

Patent application 135,763. Dual-Layer Hyperfiltration Membrane and Process for Using Same. Filed Apr. 20, 1971. PC $3/MF $0.95.

Patent application 144,953. Improved Gas Bearing and Method of Making Same. Filed May 19, 1971. PC $3/MF $0.95.

Patent application 147,489. Plasma Production Apparatus Having Droplet Production Means and Laser Pre-Pulse Means. Filed May 27, 1971. PC $3/MF $0.95.

Patent application 148,132. Process for Treatment of Aqueous Suspensions. Filed May 28, 1971. PC $3/MF $0.95.

Patent application 269,003. Indium-Sesquioxide Vacuum Gauge. Filed July 5, 1972. PC $3/MF $0.95.

Patent application 57,029. Truxene Polymer and Method for Its Preparation. Filed June 10, 1970. PC $3.50/MF $0.95.

Patent 3,675,022. Kerr Cell System for Modulating a Laser Beam. Filed May 21, 1970. Patented July 4, 1972. Not available NTIS.

Patent 3,675,072. Fast-Closing Valve System for Cyclotrons. Filed Jan. 28, 1971. Patented July 4, 1972. Not available NTIS.

Patent 3,676,677. Variable Sensitivity Visual Displayer for Infrared Laser Beams. Filed Aug. 11, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,677,825. Thermoelectric Generator. Filed Oct. 30, 1968. Patented July 18, 1972. Not available NTIS.

Patent 3,677,935. Treatment of Sewage. Filed May 4, 1964. Patented July 18, 1972. Not available NTIS.

Patent 3,678,061. 2,6-Bis (Picrylamino)-3,5-Dinitropyridine and a Method for Its Preparation. Filed Mar. 26, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,698,996. Method of Detecting the Presence of a Defective Lithium-Aluminate Target in a Reactor. Filed Nov. 24, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,688,843. Nuclear Explosive Method for Stimulating Hydrocarbon Production From Petroliferous Formations. Filed Nov. 16, 1970. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,697,329. Radioisotope Heat Source System. Filed June 4, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,441. Method for Preparing Stable Actinide Peroxide Sols. Filed Dec. 8, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,699,338. Oscillating Monitor for Fissile Material. Filed Aug. 5, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,700,892. Separation of Mercury Isotopes. Filed Aug. 25, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,163. Device for Compression Heating of Tokamak Discharges. Filed Apr. 15, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,803. Fuel Assembly for a Fast Reactor. Filed Feb. 12, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,706,630. Nuclear Chimney Radioactive Waste Disposal. Filed May 12, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,941. Random Number Generator. Filed Oct. 28, 1970. Patented Dec. 19, 1972. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration,
Washington, D.C. 20230

Patent application 177,725. Apparatus for Measuring the Rate at Which Vapors Are Evolved From Materials During Thermal Degradation. Filed Sept. 3, 1971. PC $3/MF $0.95.

Patent 3,510,649. System for Producing Two Simultaneous Records of High Energy Electrons in an Electron Microscope. Filed Oct. 3, 1967. Patented May 5, 1970. Not available NTIS.

Patent 3,627,241. Projected Image Viewer Support. Filed June 2, 1970. Patented Dec. 14, 1971. Not available NTIS.

Patent 3,672,664. Reversible Bypassable Aperture Card Reader. Filed June 2, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,299,009. Chemically Crimped Nylon Fibers. Filed Apr. 18, 1963. Patented Jan. 17, 1967. Not available NTIS.

Patent 3,295,118. Read-Out Circuit for Flux-Gate Reproducer Heads. Filed May 2, 1963. Patented Dec. 27, 1966. Not available NTIS.

Patent 3,282,187. Fast-Operating, Large Aperture Shutter. Filed Mar. 9, 1965. Patented Nov. 1, 1966. Not available NTIS.

Patent 3,276,062. Mercury-Absorbent Retrieving Devices. Filed Feb. 5, 1965. Patented Oct. 4, 1966. Not available NTIS.

Patent 3,417,350. Variable Impedance Coaxial Device With Relative Rotation Between Conductors. Filed Sept. 13, 1965. Patented Dec. 17, 1968. Not available NTIS.

Patent 3,400,330. Refractometer That Measures the Difference in Refractive Indices of a Gas at Two Frequencies. Filed May 13, 1965. Patented Sept. 3, 1968. Not available NTIS.

Patent 3,331,656. Chemically Crimping Nylon Fibers Through Formation of Disulfide Bonds Therein. Filed Nov. 22, 1961. Patented July 18, 1967. Not available NTIS.

Patent 3,366,562. Method of Conducting Electrolysis in a Solid Ionic Conductor Using an Electron Beam. Filed Apr. 29, 1965. Patented Jan. 30, 1968. Not available NTIS.

Patent 3,375,387. Fluid Cooled Multi-Foil Radiation Beam Window for High Power Beam Tubes. Filed Jan. 24, 1967. Patented Mar. 26, 1968. Not available NTIS.

Patent 3,366,951. Waveform Averaging and Contouring Device for Weather Radars and the Like. Filed Apr. 4, 1967. Patented Jan. 30, 1968. Not available NTIS.

Patent 3,575,507. Automatic Camera and Loose Sheet Turner Using Vacuum Conveyor Belts. Filed May 9, 1969. Patented Apr. 20, 1971. Not available NTIS.

Patent 3,515,001. Instrument for Measuring the Adiabatic Saturation Temperature (Thermodynamic Wet-Bulb Temperature) of a Vapor-Gas Mixture. Filed Jan. 8, 1969. Patented June 2, 1970. Not available NTIS.

Patent 3,511,028. Continuous Gas-Liquid Chromatography Method Utilizing Annual Open Columns. Filed Jan. 15, 1969. Patented May 12, 1970. Not available NTIS.

Patent 3,449,087. Purification by Selective Crystallization and Remelt. Filed June 27, 1966. Patented June 10, 1969. Not available NTIS.

Patent 3,522,434. Photocell and Control Circuit for an Automatic Page Turner. Filed Nov. 12, 1968. Patented Aug. 4, 1970. Not available NTIS.

Patent 3,477,023. Apparatus for Measuring the Energy and Current of an Accelerator Electron Beam Including Apertured Incident and Exit Electrodes. Filed Jan. 16, 1968. Patented Nov. 4, 1969. Not available NTIS.

Patent 3,490,041. Electronic Fault Finding System Using Acceptable Limits Testing. Filed Aug. 28, 1964. Patented Jan. 13, 1970. Not available NTIS.

Patent 3,524,065. Semiconductor Light Attenuator and Utilization Device. Filed Feb. 1, 1967. Patented Aug. 11, 1970. Not available NTIS.

Patent 3,600,090. Extended Range Optical Distance Measuring Instrument. Filed Sept. 26, 1969. Patented Aug. 17, 1971. Not available NTIS.

Patent 3,424,531. Distance Measuring Instrument Using a Pair of Modulated Light Waves. Filed Sept. 17, 1965. Patented Jan. 28, 1969. Not available NTIS.

Patent 3,428,890. System for Determining the Type of Atmospheric Precipitation by Detecting Meterological Parameters. Filed May 23, 1966. Patented Feb. 18, 1969. Not available NTIS.

Patent 3,437,820. Optical Distance Measuring Equipment Utilizing Two Wavelengths of Light in Order To Determine and Compensate for the Density of the Air. Filed May 9, 1967. Patented Apr. 8, 1969. Not available NTIS.

Patent 3,437,821. Radio-Optical Refractometer for Measuring Integrated Water Vapor Refractivity. Filed Nov. 8, 1966. Patented Apr. 8, 1969. Not available NTIS.

Patent 3,487,305. Electrothermic Instruments for Measuring Voltage or Current. Filed Aug. 4, 1967. Patented Dec. 30, 1969. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Bldg., Bethesda, Md. 20014

Patent application 307,202. Universal Wheelchair for the Severely Disabled. Filed Nov. 16, 1972. PC $4/MF $1.45.

Patent application 328,074. Process for the Preparation of Dehydroberbinium Salts. Filed Jan. 30, 1973. PC $3/MF $1.45.

Patent application 342,703. The Effect of Diphenylhydantoins and Related Compounds on Glaucoma. Filed Mar. 19, 1973. PC $3/MF $1.45.

Patent application 326,554. Use of Temperature-Sensitive Mutant or Recombinant Viruses for Prevention of Respiratory Disease in Man. Filed Jan. 24, 1973. PC $3/MF $0.95.

Patent application 291,347. Lymphocyte Stroma Adsorbent. Filed Sept. 22, 1972. PC $3/MF $1.45.

Patent application 289,287. Oximeter for Monitoring Oxygen Saturation in Blood. Filed Sept. 15, 1972. PC $3/MF $1.45.

Patent 3,692,899. Inhibition of Transplanted Tumor Growth by Polyinosinic-Polycytidylic Acid in Mice. Filed Dec. 17, 1969. Patented Sept. 19, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW., Washington, D.C. 20240

Patent application 342,921. Sedimentation of Phosphate Slimes. Filed Mar. 19, 1973. PC $3/MF $1.45.

Patent application 148,206. Magneto-Fluids and Their Manufacture. Filed May 28, 1971. PC $3/MF $1.45.

Patent 3,639,222. Extraction of Mercury From Mercury-Bearing Materials. Filed Oct. 30, 1970. Patented Feb. 1, 1972. Not available NTIS.

Patent 3,668,145. Production Activated Carbon in Dual Pulse Jet Engine System. Filed Nov. 9, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,713,918. Urea Stabilized Gelled Slurry Explosive. Filed Nov. 18, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,325. Recovery of Molybdenite. Filed Nov. 17, 1970. Patented Jan. 30, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 3,398,667. System for Stabilizing Torque Between a Balloon and Gondola. Filed Mar. 24, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,702,775. Diffuse Reflective Coating. Filed Feb. 12, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,463. Data Processor With Conditionally Supplied Clock Signals. Filed Dec. 23, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,951. Electrostatic Collector for Charged Particles. Filed Nov. 12, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,700,868. Logical Function Generator. Filed Dec. 16, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,898. Electronic Video Editor. Filed Aug. 4, 1970, Patented Nov. 14, 1972. Not available NTIS.

Patent 3,698,659. Ferry System. Filed Aug. 24, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,811. Flow Velocity and Directional Instrument. Filed July 27, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,699,807. Apparatus for Vibrational Testing of Articles. Filed Aug. 3, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,699,645. Method of Making Apparatus for Sensing Temperature. Filed May 26, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,698,412. Differential Pressure Control. Filed June 26, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,702,808. Process for the Production of Star Tracking Reticles. Filed Oct. 12, 1970. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,791. Method of Forming Superalloys. Filed Apr. 20, 1970. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,575. Redundant Hydraulic Control System for Actuators. Filed June 1, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,841. Intumescent Paint Containing Nitrile Rubber. Filed Feb. 12, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,735. Multispectral Imaging System. Filed May 12, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,933. Device and Method for Determining X-Ray Reflection Efficiency of Optical Surfaces. Filed July 31, 1970. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,536. Rocket Thrust Throttling System. Filed Jan. 18, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,700,192. Vortex Breech High Pressure Gas Generator. Filed Jan. 22, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,520. Foldable Construction Block. Filed Jan. 18, 1971. Patented Dec. 18, 1972. Not available NTIS.

Patent 3,698,385. Reaction Tester. Filed Oct. 7, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,701,894. Apparatus for Deriving Synchronizing Pulses From Pulses in a Single Channel PCM Communications System. Filed Sept. 11, 1970. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,702,979. Rotary Vane Attenuator Wherein Rotor Has Orthogonally Disposed Resistive and Dielectric Cards. Filed Oct. 29, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,700,005. Gas Flow Control Device. Filed Aug. 10, 1971. Patented Oct. 12, 1972. Not available NTIS.

Patent 3,702,532. Electrolytic Gas Operated Actuator. Filed Mar. 29, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,697,968. Dual Purpose Momentum Wheels for Spacecraft With Magnetic Recording. Filed Apr. 16, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,699,799. Variable Direction Force Coupler. Filed Aug. 28, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,698,848. Extrusion Can. Filed Mar. 29, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,702,972. Atomic Hydrogen Maser With Bulb Temperature Control To Remove Wall Shift in Maser Output Frequency. Filed Sept. 23, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,764. Method for Distillation of Liquids. Filed Dec. 14, 1970. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,700,961. Phototransistor Imaging System. Filed Aug. 9, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,699,511. Display Research Collision Warning System. Filed June 25, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,705,406. Multiple Reflection Conical Microwave Antenna. Filed Nov. 22, 1971. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,705,316. Temperature Compensated Light Source Using a Light Emitting Diode. Filed Dec. 27, 1971. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,137,082. Character Indicating Display Device. Filed July 13, 1962. Patented June 16, 1964. Not available NTIS.

Patent 3,704,659. Cyclically Operable Optical Shutter. Filed Oct. 15, 1970. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,700,603. Heat Detection and Compositions and Devices Therefor. Filed June 25, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,706,221. Parallel-Plate Viscometer With Double Diaphragm Suspension. Filed May 12, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,705,288. Butt Welder for Fine Gauge Tungsten/Rhenium Thermocouple Wire. Filed Dec. 31, 1970. Patented Dec. 5, 1972. Not available NTIS.

Patent 3,705,255. Hermetically Sealed Semiconductor. Filed Oct. 27, 1970. Patented Dec 5, 1972. Not available NTIS.

Patent 3,706,583. Thermal Shock Resistant Hafnia Ceramic Material. Filed Oct. 14, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,970. Head-Up Attitude Display. Filed May 12, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,281. Method and System for Ejecting Fairing Sections From a Rocket Vehicle. Filed Apr. 1, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,702,688. Space Shuttle Vehicle and System. Filed Jan. 4, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,706,230. Rotary Actuator. Filed Jan. 5, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,714,332. Process for Making Diamonds. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,713,290. Gas Turbine Engine Fuel Control. Patented Jan. 30, 1973. Not available NTIS.

Patent application 326,327. Battery Testing Device. Filed Jan. 24, 1973. PC $3/MF $0.95.

Patent application 329,958. Low Distortion Automatic Phase Control Circuit. Filed Feb. 5, 1973. PC $3/MF $0.95.

Patent application 328,795. Disconnect Unit. Filed Feb. 1, 1973. PC $3/MF $0.95.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

Patent application 211,597. Microwave Crash Sensor for Automobiles. Filed Dec. 23, 1971. PC $3/MF $0.95.

[FR Doc. 73-11605; Filed 6-12-73; 8:45 am]

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 6, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-22-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-05-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-01-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-21-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-09-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-08-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-13-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-02-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-24-72

Expiration of patents: The patents within the range of numbers indicated below expire during June 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,748,388 to 2,752,594, inclusive
Plant Patents..... Numbers 1,481 to 1,491, inclusive

REISSUES

JULY 3, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

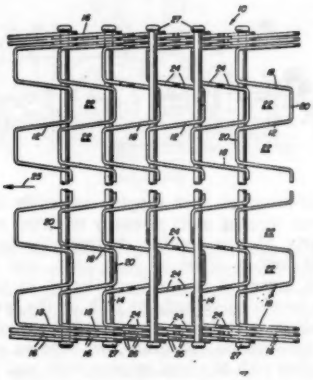
27,690
FLAT WIRE CONVEYOR BELT HAVING SLOTTED BAR LINKS

Gerald C. Roinestad and John F. Rodman, Jr., Winchester, and John S. Burnett, Front Royal, Va., assignors to Ashworth Bros. Inc., Fall River, Mass.

Original No. 3,439,795, dated Apr. 22, 1969, Ser. No. 687,205, Dec. 1, 1967. Application for reissue July 29, 1970, Ser. No. 59,229

Int. Cl. B65g *15/30*

U.S. Cl. 198—193 24 Claims



A flat wire conveyor belt comprising: a plurality of slotted tractive links, a plurality of tractive cross pins for interconnecting the tractive links, and a plurality of slotted bar links positioned adjacent the edges of the belt and connected thereto by the cross pins for carrying most of the tractive load of the belt as it travels around lateral curves.

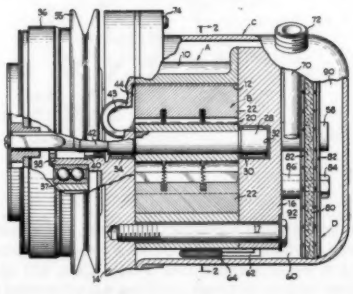
27,691
OIL SEPARATOR FOR ROTARY COMPRESSOR

Lester E. Harlin and Walter C. Moore, York, Pa., assignors to Borg-Warner Corp., Chicago, Ill.

Original No. 3,478,957, dated Nov. 18, 1969, Ser. No. 716,067, Mar. 26, 1968. Application for reissue Nov. 4, 1971, Ser. No. 195,666

Int. Cl. F01c *21/04;* F04c *15/00, 29/02*

U.S. Cl. 418—83 5 Claims



Apparatus for separating oil entrained by the refrigerant in the discharge gas of a rotary compressor. This discharge gas, comprising refrigerant and oil, is delivered to a chamber defined in part by a shell enclosing the compressor casing and an oil coalescing medium extending across the shell. This discharge gas sweeps back through substantially the entire surface of the coalescing medium so that the oil droplets are coalesced and returned to the sump. The refrigerant gas passes out of the shell through a conventional discharge line.

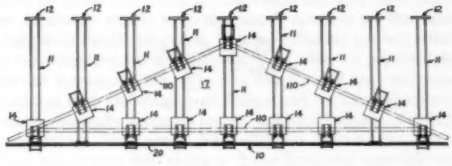
27,692
ROOF TRUSS FORMING MACHINE

Donald P. Post, Palatine, Ill., assignor to Structomatic, Inc., Chicago, Ill.

Original No. 3,530,790, dated Sept. 29, 1970, Ser. No. 798,031, Feb. 10, 1969. Application for reissue Dec. 29, 1971, Ser. No. 213,758

Int. Cl. B30b *1/18*

U.S. Cl. 100—100 14 Claims



A roof truss forming machine for assembling and nailing with nail plates timbers into a planar roof truss includes a stationary elongated rail and a plurality of bridges extending laterally therefrom and adjustably positioned along the rail. Each bridge longitudinally adjustably carries at least one base and each base rotatably adjustably carries a stand which supports the timbers to be nailed. Each stand movably carries a cradle which is movable toward and away from the timbers to be nailed, and each cradle supports a hydraulically operated C-clamp for pressing the nail plates into the timbers supported by the stand when the cradle is moved toward the timbers.

27,693
VARIABLE PIEZOELECTRIC DELAY LINE

Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

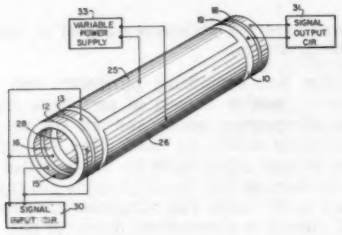
Original No. 3,537,039, dated Oct. 27, 1970, Ser. No. 755,098, Aug. 26, 1968. Application for reissue Feb. 19, 1971, Ser. No. 117,022

Int. Cl. H03h *9/30*

U.S. Cl. 333—30 R 15 Claims

A delay line is made of polarized piezoelectric material and is shaped in the form of an elongated hollow tube. Input electrodes and output electrodes are formed on opposite ends of the tube in such a manner that electrical signals applied to the input electrodes develop an electric field in the polarized piezoelectric material so as to create a torsional vibration of the tube. The output electrodes act to convert the torsional vibration to an elec-

trical signal substantially the same as the input electric signal. Control electrodes are positioned intermediate the



input and output electrodes and a potential applied to the control electrode acts to vary the delay time.

27,694

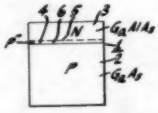
SEMICONDUCTOR LASER PRODUCING LIGHT AT TWO WAVELENGTHS SIMULTANEOUSLY

Henry Kressel, Elizabeth, and Frank Z. Hawrylo, Mercerville, N.J., assignors to RCA Corporation

Original No. 3,537,029, dated Oct. 27, 1970, Ser. No. 735,641, June 10, 1968. Application for reissue Mar. 15, 1971, Ser. No. 124,207

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **7 Claims**



A semiconductor laser comprising adjacent regions of gallium-aluminum arsenide having different aluminum concentrations and different conductivity types. A P-N junction is situated in one of the regions closely adjacent the interface between the regions. The portion of the laser between (i) the P-N junction and (ii) the mechanical interface between the regions has a thickness less than a value on the order of twice the diffusion length for minority carriers in the semiconductor material.

27,695

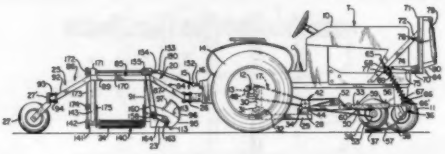
BEET TOPPING ASSEMBLY

Andrew F. Barnes, Rte. 1, Box 295, Longmont, Colo. 80501

Original No. 3,426,514, dated Feb. 11, 1969, Ser. No. 491,224, Sept. 29, 1965. Application for reissue Nov. 12, 1971, Ser. No. 198,393

Int. Cl. A01d *23/02*

U.S. Cl. 56—121.46 **14 Claims**



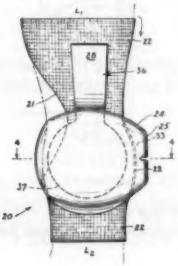
A tractor-mounted beet topping assembly includes a series of beet topping units pivotally mounted and biased independently of one another downwardly into cutting engagement with a series of beet rows, and a pick-up assembly is arranged in trailing relation to the tractor and to the beet topping units to pick up the severed beet crowns, foliage and trash, the pick-up assembly being especially constructed for multi-row topping operations in cooperation with the beet topping units and is characterized by a series of flexible finger rows on a drive tube being driven at opposite ends through one or more stripper rolls located in closely spaced relation behind the finger rows.

PATENTS

GRANTED JULY 3, 1973

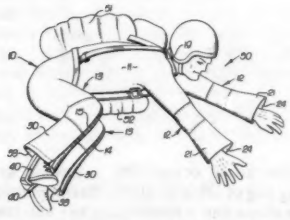
GENERAL AND MECHANICAL

3,742,517
PROTECTORS AND KNEE GUARDS
Daniel Bednarczuk, 37-04 Parsons Boulevard, Flushing, N.Y., and Arnold T. Milton, 7 Olmsted Road, Scarsdale, N.Y.
Filed Oct. 15, 1971, Ser. No. 189,617
Int. Cl. A41d *13/06*
U.S. Cl. 2—22 9 Claims



Our invention covers a protector and knee guard primarily intended to prevent or lessen the tendency of athletes to suffer knee injuries and for pre-and-post-operative protection, stabilization, and support in rehabilitation treatment; it comprises essentially an encasement with suitable protection for the knee, both front and side portions thereof and supporting oppositely disposed elastic members for the limbs above and below the knee with several modifications including but not limited to "SNAP-ON" pockets for the insertion of sponge rubber or other material for the protection of the knee.

3,742,518
JUMP SUIT
Joe N. Garcia, Wildomar, Calif., assignor to Marshall Yoakum, Los Angeles, Calif.
Filed Dec. 15, 1971, Ser. No. 208,214
Int. Cl. A41d *13/00*
U.S. Cl. 2—79 10 Claims

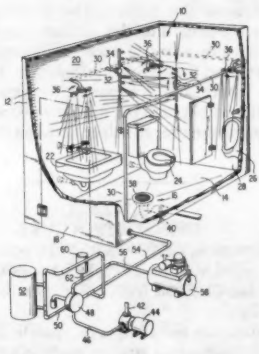


A parachutist's jump suit includes a main sleeve to receive and fit closely about a limb; also, an auxiliary sleeve is attached to the main sleeve and extends along it toward an opening formed by the auxiliary sleeve to receive air in a space defined between the main and auxiliary sleeves, thereby to expand the auxiliary sleeve and develop pressure tending to impede the parachutist's fall.

3,742,519
ROBE CONSTRUCTION
Mary I. Wiley, 280 W. Park Avenue, Apt. 8, El Cajon, Calif.
Filed June 1, 1971, Ser. No. 148,679
Int. Cl. A41d *3/08*
U.S. Cl. 2—88 3 Claims

A robe, which may be jacket length or full length, is featured by novel sleeve and armhole structure and lapel and collar structure which lend maximum comfort to the wearer along with simple elegance. The cape sleeves are not stitched in the underarm portions and fall free with the greater length toward the rear. This promotes freedom of arm movement, coolness and underarm ventilation and makes a garment of one size actually perfectly comfortable for persons of different proportions. The lapels and collar are cut unitary with the front panels and this, along with the foregoing armhole treatment, make for ease and simplicity in making the garment. The same features also make the robe reversible with unexpected ease and facilitate the double ply construction of the garment for such reversal.

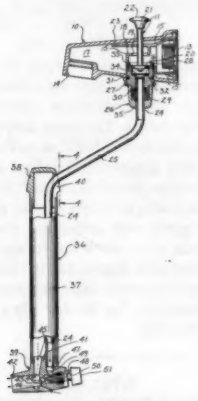
3,742,520
PUBLIC REST ROOM CLEANING SYSTEM
Eugene P. Bernardi, Harrisburg, Pa., assignor to Bernardi Bros., Inc., Harrisburg, Pa.
Filed Nov. 12, 1970, Ser. No. 88,554
Int. Cl. A47k *17/00*
U.S. Cl. 4—1 8 Claims



A public rest room is automatically washed, rinsed, sanitized and dried by nozzles strategically placed for direct-

ing appropriate fluids in sequential fashion over every area of the wall and floor surface of the room and into effective contact with the wash and toilet facilities in the room with the nozzles being supplied with wash, rinse, sanitizing and drying fluids from appropriate reservoirs and supplies through valved conduit means disposed along the walls of the room. The cleaning system may be installed in existing public rest rooms; in addition, the room may be a self-contained structure that may be placed adjacent an erected building or permanently installed in a building, such as a gasoline service station. The cleaning system contains the nozzle arrangement and attendant operating structure and components as a built-in adjunct to its operation and maintenance.

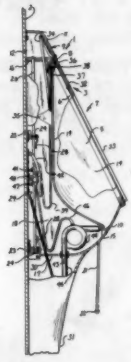
3,742,521
WHIRLPOOL ATTACHMENT FOR TUBS
Edwin F. Bolgert, and Eugene O. Weeden, both of Kohler, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 9, 1971, Ser. No. 132,841
Int. Cl. A47k *3/00*
U.S. Cl. 4—180 **7 Claims**



A whirlpool attachment for a tub-shower installation includes a fresh water supply line fitted to the tub spout in alignment with a diverter valve which closes off the line when the spout is open. The line leads through a housing to an orifice facing a mixing chamber, and a needle valve is provided to control and close the orifice. The housing defines an air passage which opens into the chamber and a recirculating passage allows tub water to enter the chamber to provide a combined, aerated flow of high turbulence. The diverter valve directs flow either to the spout or to both the shower and whirlpool attachment, and the needle valve and a shower shutoff valve enable the user to select between the shower and attachment.

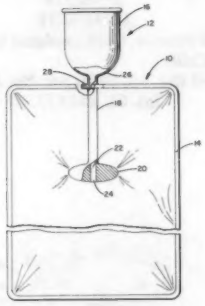
3,742,522
URINAL STRUCTURE
Robert L. Stevenson, 7320 W. 87th St., Overland Park, Kans.
Filed May 10, 1971, Ser. No. 141,763
Int. Cl. E03d *3/00, 5/014, 5/016, 5/10*
U.S. Cl. 4—10 **7 Claims**

A urinal structure including a receptacle movably mounted for movement between a storage position and an in-use position, said receptacle having an opening in an upper portion thereof and a lid movable between a position covering the opening and a position exposing the opening in response to movement of the receptacle between the storage position and the in-use position and a water discharge member mounted adjacent the receptacle opening for communicating flushing



fluid into same. The water discharge is activated in response to movement of the receptacle to the in-use position.

3,742,523
DISPOSABLE URINAL
Samuel M. Atkins, 81 Eastridge Drive, Waterbury, Conn.
Filed Feb. 10, 1972, Ser. No. 225,168
Int. Cl. E03d *13/00*; A47k *11/00*; A61g *9/00*
U.S. Cl. 4—110 **10 Claims**



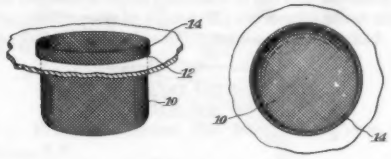
A disposable urinal comprising a flexible generally flat sealed holding bag of urine insoluble thermoplastic material in a rectangular shape and a funnel member, the latter having a mouth portion, an elongated stem portion and a bulbous terminal portion at the end of the stem. The capacity of the bag is at least substantially in excess of twice that of an average adult bladder capacity and is preferably substantially in excess of the average adult 24-hour discharge. The diameter of the bulbous portion is such that urine will always reside beneath a central discharge opening therein when the bag is disposed in a flat attitude. When the bag is suspended, the bulbous end portion is located at an intermediate area such that urine level always remains beneath the discharge opening preventing reentry.

3,742,524

HAIR STRAINER: DRAIN STRAINER

Jean Ballentine, 4819 Cahuenga Boulevard, North Hollywood, Calif.

Filed Aug. 2, 1971, Ser. No. 167,918
Int. Cl. E03c *1/26*
U.S. Cl. 4—286 **7 Claims**



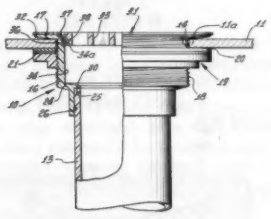
A drain sieve adapted to fit detachably in a drain hole of a sink or the like to catch hair, preventing it from clogging traps.

3,742,525

DRAIN FITTING

Robert A. Oropallo, South Pasadena, Calif., assignor to American Brass and Aluminum Foundry, Inc., Los Angeles, Calif.

Filed June 8, 1971, Ser. No. 150,961
Int. Cl. E03c *1/26*
U.S. Cl. 4—288 **8 Claims**



A fitting for a drain floor having an opening toward which a plastic pipe projects comprises:

a. a tubular plastic body sized for reception in said opening and having an outwardly projecting top flange to overlie the floor extent bounding the opening, an external thread below said opening at the body exterior, and a nut threadably engaging the thread and rotatable relative to the body to effect clamping of said floor extent between the top flange and nut, said body, flange, thread and nut consisting of molded plastic material,

b. the body having an internal flange defining an axially downwardly facing stop shoulder spaced below the level of said top flange, and the body defining a bore extending below said stop shoulder and sized to receive said pipe with push fit interference so that the pipe upper end may be engaged with the stop shoulder, whereby the pipe and body may be rapidly made up and bond connected at said bore.

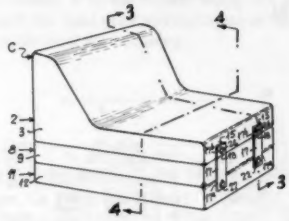
3,742,526

COMBINATION CHAIR AND CHAISE LOUNGE

William H. Lillard, Fort Smith, Ark., assignor to D. Kirk Parsons, Fort Smith, Ark., a part interest

Filed Feb. 7, 1972, Ser. No. 223,843
Int. Cl. A47c *17/14, 27/00*
U.S. Cl. 5—12 **5 Claims**

A sectioned cushion couch used as a chair when folded and as a chaise longue when unfolded. The couch comprises a unitary seat and back section to which is serially hinged one or more additional sections capable of being folded underneath the unitary section to form the base of a chair. Conversely, the additional base section or sections may be unfolded from chair supporting position to extend the length of the seat and back section and thereby form a chaise longue. The cushion sections are preferably composed of foam cushioning compositions such as urethane, neopreme and latex. The seating and



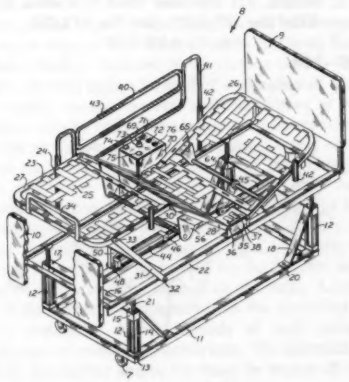
backrest area of the chair adjacent the occupant is cushioned with a relatively light density weight foam to afford seating comfort, while more remote portions of the seat and backrest section and the entire base section or sections are cushioned with a denser foam composition to provide the necessary rigidity and strength.

3,742,527

HOSPITAL BED

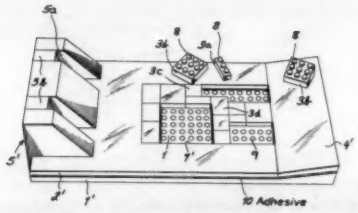
Thomas W. Johnston, Winter Park, and Jack M. Pippin, Sanford, both of Fla., assignors to Unlimited Development, Inc., Orlando, Fla.

Filed Mar. 1, 1972, Ser. No. 230,605
Int. Cl. A61g *7/00*; A47c *3/32*
U.S. Cl. 5—63 **6 Claims**



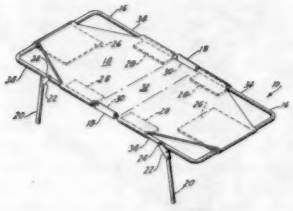
A pneumatic operated hospital bed apparatus is made substantially from materials having a high degree of electrical insulation, whereby the bed can be operated without electricity and without providing conducting surfaces. Thus, the hazards from a patient or equipment coming into contact with a conducting surface during the use of electrically operated diagnostic or therapeutic equipment is reduced. Fluid actuated cylinders for operating the bed are also utilized to reinforce portions of the plastic bed, and a pneumatic circuit is provided with a centrally located control box for operating movable portions of the bed.

3,742,528
MATTRESS FOR INVALIDS
Josef Munch, Duisburg-Hamborn, Germany, assignor to Firma Otto Bock Orthopadische Industrie KG, Duderstadt, Germany
Continuation-in-part of Ser. No. 34,094, May 4, 1970, Pat. No. 3,639,927. This application Feb. 15, 1972, Ser. No. 226,605
Int. Cl. A61g 7/02
U.S. Cl. 5—91 **3 Claims**



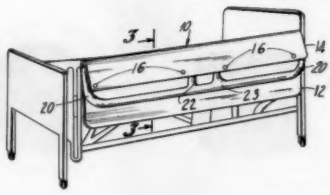
A frame of foam polymer with a rectangular cutout, positioned to underlie the major part of the body of a patient recumbent thereon, is cemented onto a base plate serving as a support for a multiplicity of square or rectangular inserts of like foam material detachably secured to the base plate with the aid of mating pegs and holes so as to be removable at locations proximal to a pressure-sensitive part of the patient's body. A transverse pad at the foot end of the mattress has vertical recess open toward the head end to receive the feet of the patient whose legs rest on anatomically shaped wedge pieces which extend into these recesses but terminate short of their closed ends to leave room for the unsupported heels of the patient.

3,742,529
RAISED SEAT PLATFORM
Richard C. Stehlik, 321 Sheridan Road, Winnetka, Ill.
Filed Dec. 27, 1971, Ser. No. 212,018
Int. Cl. A45f 1/00
U.S. Cl. 5—118 **4 Claims**



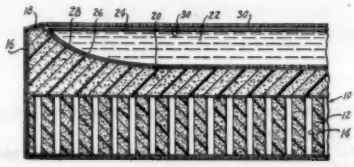
A foldable bed is formed from a pair of substantially U-shaped end members joined together by a pair of connecting links. A flexible sheeting is secured to the frame formed by the U-shaped members and the connecting links and provides a support platform for the bed. A pair of swingable legs are provided on one side of the frame, each leg being connected to one of the U-shaped members. The connecting links are characterized by a pair of cut-outs forming end tabs for connection to the U-shaped members. One of the cut-outs is of lesser extent that the other whereby end portions of the U-shaped members may be pivoted about the tabs for folding the bed into a compact condition and, also, for supporting the members when the bed is extended to an open position.

3,742,530
BEDSIDE RAIL COVER
Margie Irene Clark, 321 East Tyler, McAlester, Okla.
Filed June 16, 1971, Ser. No. 153,598
Int. Cl. A47c 21/00
U.S. Cl. 5—331 **1 Claim**



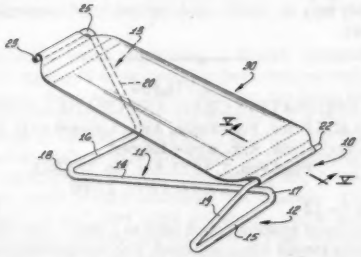
This describes a cover to be used over bed rails to protect the occupant of the bed from injury caused by contact with the rails and also as a means of giving privacy to the occupant. The cover is of washable material, plastic or quilted cotton and has an inside part about twice the width of the rail and a folded-over part extending over the outside of the rail and having a width about half of the rail. Fasteners hold the two parts in place on the rail. Suitably, the cover can be made of stretch or expandable material so as to fit on rails of various length. It can measure 24 × 64 inches.

3,742,531
WATER BED
Marjory E. Alsbury, and Merwyn G. Alsbury, both of P.O. Box 156, Dixon, Calif.
Filed May 17, 1971, Ser. No. 143,752
Int. Cl. A47c 27/08
U.S. Cl. 5—348 WB **1 Claim**



A spongy base, a plastic frame thereabove, a water mattress above the plastic frame, and a waterproof covering surrounding the base, frame, and mattress.

3,742,532
BODY SUPPORTING DEVICE
Joseph Bernstien, 5117 Hesperia Avenue, Encino, Calif.
Filed Aug. 23, 1971, Ser. No. 174,075
Int. Cl. A47f 1/00; A47c 9/12
U.S. Cl. 5—110 **10 Claims**



A body supporting device, such as a chaise lounge, which includes a generally rectangular flexible body supporting

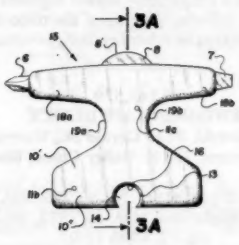
sheet, which may be of fabric or the like, and which is supported at its short ends by a frame, the frame including a single continuous tubular member having a Z-shaped base portion and two end portions, the end portions having first members connected to the free ends of the Z-shaped base portion and extending upwardly and outwardly in a generally vertical longitudinal plane and at an angle to the horizontal and second members connected to the free ends of the first members and extending transversely in a generally horizontal plane and to which the ends of the body supporting sheet are attached.

3,742,533

MULTIPLE-USE TOOL

Samuel J. Brunette, Crooked Oak Road, Belle Terre, Port Jefferson, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,033
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 G 9 Claims



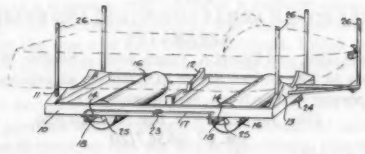
A multi-purpose tool which in a preferred embodiment is a flattened member having upper and lower flattened edges of predetermined width, with the lower edge having a groove extending along the edge receivable of a wing nut and of the shaft on which a wing nut would be mounted, and defining a through-space between opposite flattened faces of the tool with one face defining a circular shape around said through-space and having a diameter slightly less than that of a predetermined valve-face of a water-outlet valve of an aircraft gasoline tank such that upward pressure opens the valve whereby water in the bottom of the gas tank is drainable through the through-space of the tool, and an opposite face of the tool defining a circular perimeter around the through-space and having aligned with a diameter of the through-space oppositely extending slots along the surface of that face of the member, and extending about perpendicularly from the groove-containing edge a narrowed shaft portion continuous with a handle portion embodying interconnected convex screw driver head, Phillips screw driver head and a flat-faced screw driver head extending in different directions from one another in a common plane with the members opposite flat faces.

3,742,534

BOAT LAUNCHING AND BEACHING DEVICE

Rex McLean Guest, 754 Chiddington Avenue, London, Ontario, Canada

Filed Oct. 8, 1971, Ser. No. 187,738
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T 2 Claims



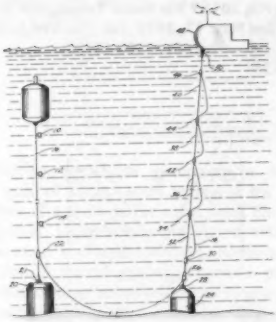
The device includes a frame for supporting a boat, the frame supporting at least two inflatable rollers that can act as wheels when inflated so that the device forms a vehicle to convey the boat into and out of the water. With the rollers inflated, the device has positive buoyancy so as to engage the hull of the boat. By partially or completely deflating the rollers, the device can be brought to negative buoyancy, so as to drop away from the bottom of the boat after launching, or conversely to enable it to be moved along the bottom to a position beneath the boat prior to reinflation of the rollers and engagement of the boat for beaching.

3,742,535

OPEN OCEAN SHALLOW WATER MOOR

Paul L. Horrer, La Jolla, and Robert M. Bridges, Northridge, both of Calif., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 31, 1971, Ser. No. 129,716
Int. Cl. B63b *21/00*; G01w *1/00*
U.S. Cl. 9—8 R 8 Claims



An open ocean moor is disclosed for use at comparatively shallow ocean depths. The moor consists of a buoy floating on the surface which is fastened to an anchor on the bottom by means of a flexible tether formed of a plurality of linked sections of highly elastic material such as rubber of relatively large cross-sectional area. The elastic sections are formed with heavy loops or eyelets at each end, and adjoining sections are connected by means of a link formed of two mating double grommet assemblies which, preferably, are also formed of mating configuration with respect to the loops to minimize stress concentrations. An electrical cable which is connected to various underwater instruments extends from the buoy to the anchor. This cable is supported on the flexible tether line by means of separate cable clamps on the links. A substantial amount of slack must be maintained in the electrical cable to allow for stretching during periods of high wave action without danger of pulling the cable taut. The electrical cable is fastened to the anchor and to the buoy by means of cable termination devices of a type known in the art.

3,742,536

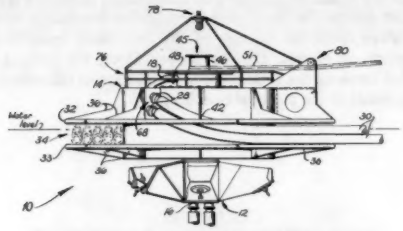
OFFSHORE LOADING BUOY WITH HOSE REELING

Charles A. Sada, 710 West 40th Street, San Pedro, Calif., and Yoram Katz, 5437 Radford Street, North Hollywood, Calif.

Filed May 18, 1971, Ser. No. 144,599
Int. Cl. B63b *35/00*
U.S. Cl. 9—8 P 7 Claims

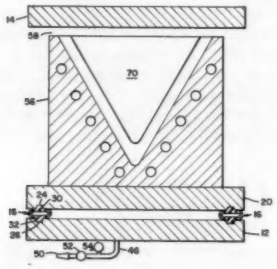
A floating offshore loading terminal has an upper rotary hull structure rotatably mounted on a moorable lower base struc-

ture with upper and lower fluid conduit systems communicating through a swivel coupling between the structure. A motor



drive rotates the upper rotary hull structure to wind flexible buoyant cargo transfer hoses circumferentially into and from a storage spool surrounding the hull structure.

3,742,537
STATIC PRESS
Robert E. Merrill, 20189 Via Santa Teresa, San Jose, Calif.
Filed Nov. 17, 1971, Ser. No. 199,569
Int. Cl. B30b *13/00*
U.S. Cl. 100—35 **9 Claims**

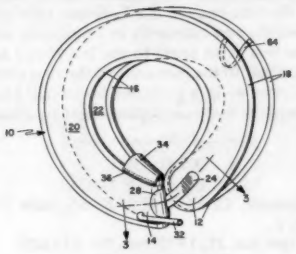


A static press of relatively simple construction is provided having first and second spaced apart stationary plates, a movable third plate intermediate said first and second plates and a flexible conduit in the form of an annulus separating the first and third plates. The conduit defines a chamber which is enclosed by the first and third plates.

An object is introduced between the second and third plates with a small amount of headroom, so that upon pressurizing the conduit the object is pressed between the plates and the chamber hermetically sealed. The chamber is then pressurized to provide a uniform work force against the object. When the object is to be released, the pressure in the chamber and conduit is released, lowering the object out of engagement with the second plate.

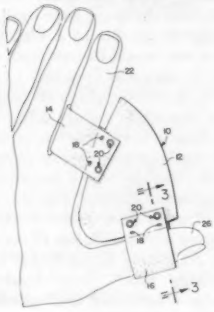
3,742,538
REVERSIBLE LIFE PRESERVER
Eric P. Smith, Coronado, Calif., assignor to Emergency Systems International, Santee, Calif.
Filed May 3, 1971, Ser. No. 139,615
Int. Cl. B63c *9/08*
U.S. Cl. 9—340 **8 Claims**

A strapless life preserver which is reversible and in fact can be worn in four different positions and in each of these positions permits free use of the arms. There are two annular tubular wings of generally similar size and shape, formed preferably from a single helical tubular structure of air-tight, semi-resilient sheet material, or from a helical casing with one or more inner tubes of lengths corresponding to the position thereof in the helical casing, the ends of the tubular structure being joined together at a central point of the tubular structure and having portions thereof adjacent to said point restrained from separation so that the inherent tendency for



inflated flexible tubes to straighten results in the remaining portions of the two wings being biased together, thus making the life preserver self-clamping upon the torso of the wearer, without resort to straps or other fastening structures.

3,742,539
SWIMMING AID DEVICE
Vincent F. Okuniewski, 5136 Gerald St., Warren, Mich., and Leonard S. Flowers, 753 E. Valley Chase, Bloomfield Hills, Mich.
Continuation-in-part of Ser. No. 97,275, Dec. 11, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,265
Int. Cl. A63b *31/02*
U.S. Cl. 9—308 **10 Claims**

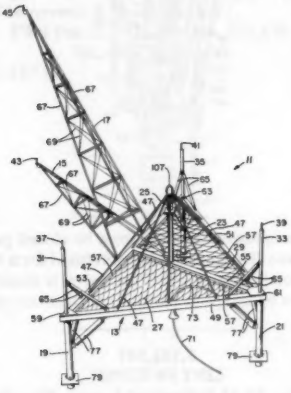


A swimming aid device attached to the hands of the swimmer, for improving the swimming movement of the wearer through the water, which comprises a generally V-shaped body portion having laterally extending members adapted to encircle at least a portion of the thumb and forefinger and to be engaged by fasteners mounted on the body portion. The device is made of relatively flexible resilient or elastic sheet material. The body portion may be plain or arranged with reinforcing ribs. A plurality of fastening arrangements for the laterally extending members are disclosed.

3,742,540
PASSIVE SONAR ARRAY MOUNTING AND RECOVERY APPARATUS
Charles O. Hill, and Elbert A. Pence, both of Seattle, Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 25, 1972, Ser. No. 220,654
Int. Cl. B63c *7/20*
U.S. Cl. 9—400 **10 Claims**

A passive sonar array mounting and recovery apparatus comprising a frame that is mounted on a plurality of legs. A

net is stretched across the interior region of the frame and is held in place with twine. Centrally located and extending vertically upward from the frame is a center post. A plurality of grapnel rods have their ends attached to the upper end of the center post and the other ends attached to the periphery of the frame. The grapnel rods are uniformly spaced apart and ex-



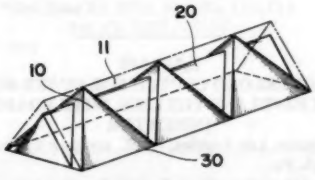
tended outward and downwardly from the top of the center post to the frame. At the corners of the frame are vertically extending transducer support members. Two transducers are respectively supported by a horizontal tower and a vertical tower that are attached to and extend outwardly from the frame.

3,742,541

TOOL FOR FORMING INTERNAL SCREW-THREADS AND METHOD OF MAKING THE SAME

Seiji Ohmoto, Tokyo, Japan, assignor to Seiji Ohmoto and Kabushiki Kaisha Nagoya Rashi Seisakusho, Nakamura-ku, Nagoya, Japan

Filed Dec. 10, 1970, Ser. No. 96,753
Int. Cl. B23g 5/06
U.S. Cl. 10—141 R **3 Claims**



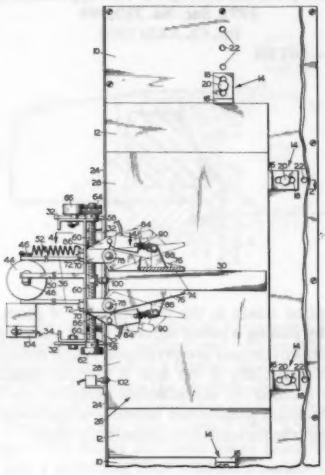
A tool for forming internal screw-threads comprising a base material, a first screw-thread of a uniform cross-section wound spirally in convolutions on the outer peripheral surface of said base material, a number of cutout portions disposed at intervals as required along the entire length of said first screw-thread, and a second screw-thread of a uniform cross-section differing from the cross-section of said first screw-thread and formed in the space of said cutout portions. Either said first screw-thread or said second screw-thread coincide in its cross-section with an internal screw-thread to be formed by said tool, and said two screw-threads are provided with a number of relief portions without reducing the mechanical strength of the screw-threads, so that the single operational length of the tool is minimized and the overall operational length thereof is maximized.

3,742,542

BOOK JACKETING APPARATUS

Howard R. Klug, Beaverton, Oreg., assignor to Graphic Arts Center, Portland, Oreg.

Filed May 26, 1972, Ser. No. 257,399
Int. Cl. B42c 19/00
U.S. Cl. 11—1 R **9 Claims**



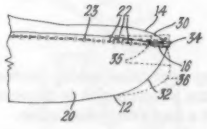
Book jacketing apparatus comprises a vertical frame mounting a pair of clamp arms arranged for clamping the bunched leaves of a book as the open book cover is wrapped with a dust jacket. Drive means associated with the arms adjust them between a closed clamping position and an open release position. A lateral arm adjustment is provided to accommodate books of different thickness. A pivotal frame with associated reciprocating drive enables adjustment of the frame between a working position and an out of the way position, facilitating removal of the jacketed book from the apparatus.

3,742,543

METHOD OF AND APPARATUS FOR MOCCASIN TOE FORMING

Joseph R. Ioannilli, Beverly, Mass., assignor to USM Corporation, Bostom, Mass.

Filed Nov. 15, 1971, Ser. No. 198,604
Int. Cl. A43d 9/00
U.S. Cl. 12—142 MC **10 Claims**



Method and apparatus for forming a pocket in a vamp prior to the vamp's being sewn to a plug in the manufacture of true moccasin-type footwear. The method includes stretching of the vamp beyond its elastic limit generally in the sole line, and heat setting the stretched portion to hold the stretch such that a pocket-like portion is formed in the vamp corresponding to the sole area. Apparatus for performing the method includes means to secure the vamp adjacent the sole line from lateral movement during the stretching operation, means to effect relative vertical displacement between the clamped areas to accomplish the stretching of the vamp and heating means to accomplish permanent deformation of the material beyond its elastic limit.

3,742,544

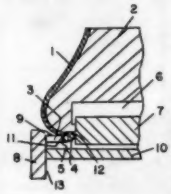
METHOD OF MAKING FOOTWEAR

Horace R. Auberry, and Anton Liebscher, both of Waynesville, N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.

Division of Ser. No. 120,078, March 2, 1971, Pat. No. 3,701,273, which is a continuation-in-part of Ser. No. 34,003, May 4, 1970, Pat. No. 3,659,301. This application Aug. 14, 1972, Ser. No. 280,099

Int. Cl. A43d *9/00*

U.S. Cl. 12—142 RS **3 Claims**



The invention refers to the manufacture of shoes with uppers lasted by pulling a string secured to the lasting margin of the upper. Improvements are presented which reduce costs of manufacture especially if the sole is molded directly to the upper. The method of manufacture includes use of a last deformed to obtain preselected location of the lasting margin and to prevent the formation of undesirable spew.

3,742,545

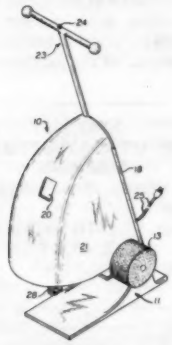
SHOE POLISHING APPARATUS

Arthur I. Kravitz, 4 Fenimore Road, Port Washington, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,203

Int. Cl. A47l *23/02*

U.S. Cl. 15—31 **3 Claims**



A shoe polishing apparatus having motor driven polishers and a reservoir from which polish is dispensed upon the shoe of the user through a foot-controlled valve.

3,742,546

SURFACE TREATING APPARATUS

Bengt Olof Crener, Taby; Erik Arne Blaeidh, Skarholmen, and Stig Carl-Oskar Ernolf, Sollentuna, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

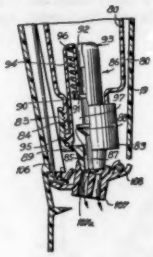
Division of Ser. No. 884,166, Dec. 11, 1969, Pat. No. 3,639,939. This application May 10, 1971, Ser. No. 141,832

Claims priority, application Sweden, Dec. 11, 1968, 16899/68

Int. Cl. A47l *11/16*

U.S. Cl. 15—50 R **7 Claims**

In surface treating apparatus having rotatable treating members movable over a surface, a container for liquid wax which is positioned in a compartment and has an outlet at its bottom normally closed by a valve having a vertically movable stem. A quantity of liquid wax is dispensed from the container each



time the valve is moved upward from its closed position and returned thereto. The container is prevented from moving upward in its compartment when the valve is moved from its closed position by an upward force applied to the valve stem.

3,742,547

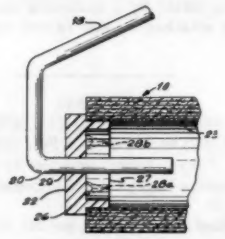
LINT SWEEPER

Murray Sohmer, 54-45-Netherland Avenue, Riverdale, N.Y.

Filed July 1, 1971, Ser. No. 161,362

Int. Cl. A47l *13/00*

U.S. Cl. 15—104 A **3 Claims**



A tacky roller flooring cleaning employing disposable tacky material. An elongated handle at right angles to the axis of the roller provides a convenient tool. A protective hanger is provided.

3,742,548

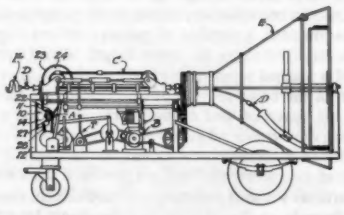
SAFETY OVERLOAD CLUTCH FOR SEWER-RODDING MACHINES AND THE LIKE, WITH LOADING INDICATOR

Peter L. Ciaccio, Los Angeles, Calif., assignor to Flexible, Inc., Pittsburgh, Pa.

Filed Mar. 27, 1972, Ser. No. 238,151

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3 SN **7 Claims**



A spring-loaded clicking jaw clutch for overload release, is provided with a load adjustment including an adjustment

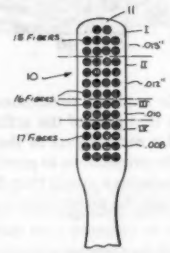
screw transmitting its loading through a hydraulic column which also transmits the load to a pressure gage on which the load intensity is visibly indicated.

3,742,549

CONTOURED TOOTHBRUSH

Irwin W. Scopp, 110 Bleeker St., New York, N.Y., and Gerson Cohen, 2716 Avenue J, Brooklyn, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,170
Int. Cl. A46b *15/00*
U.S. Cl. 15—167 R **6 Claims**



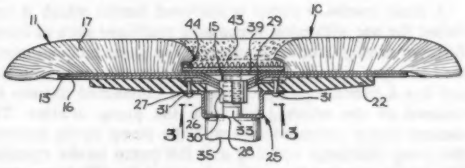
A contoured toothbrush adapted to reach and clean areas which are inaccessible to conventional toothbrushes, the configuration of the brush being such as to conform to the natural convexity of the teeth. The toothbrush is constituted by an array of tufts, each formed by a cluster of bristles mounted on a shank, the height of the tufts in the longitudinal direction diminishing progressively from the front to the rear of the array. The diameter of each bristle is proportionally related to the height thereof (the taller the thicker, and the shorter the thinner), whereby the consistency of the brush is effectively homogeneous. In the transverse direction, the height of the tufts follows a curve to define a concave channel which conforms to the convex form of the teeth engaged thereby.

3,742,550

BUFFER PAD WITH CENTRAL PORTION OF THE WORKING NAP REMOVED

Orval W. Wakefield, Cypress, Calif., assignor to Pit-Bar Manufacturing Company, Los Angeles, Calif.

Filed June 23, 1971, Ser. No. 155,712
Int. Cl. A47l *11/164*
U.S. Cl. 15—230 **5 Claims**



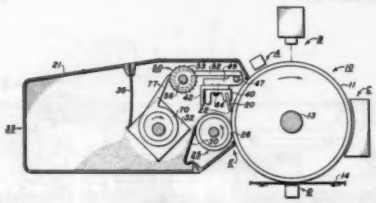
A rotatable buffer pad is disclosed which is so constructed that all of the working nap is located in the outer annular area thereof. Such a construction eliminates the working nap on central portion of the buffer pad which does not contribute to the buffing action and which becomes soggy and ineffective with the substance used for buffing. Such a construction further aids in controlling the rotating buffer pad by eliminating the kicking action that tends to result from the tilting of the buffer pad about the high, ineffective, central portion of the working nap.

3,742,551

TONER CLEANING AND STORING APPARATUS

George J. Oriel, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 27, 1971, Ser. No. 184,156
Int. Cl. G03g *13/16*
U.S. Cl. 15—256.51 **4 Claims**



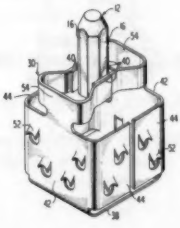
Apparatus for separating residual toner particles from a moving photoconductive surface and automatically storing the separated particles within a storage area. A blade element is arranged to move between the photoconductive surface and the residual toner material to separate the toner from the surface and direct the toner into contact with a transport roll. The transport roll moves the toner away from the cleaning zone and into a collecting zone wherein a paddle is rotatably supported to pump the toner into a substantially horizontally aligned storage area. Further means are provided to clean the paddle as it passes through the storage area and to seal the storage area to prevent the separated residual toner from migrating back into the cleaning zone.

3,742,552

INDEXING FURNITURE GLIDE

Anthony J. Balchunas, Rahway, N.J., assignor to Robert E. Miller & Co., Inc., New York, N.Y.

Filed May 1, 1972, Ser. No. 248,877
Int. Cl. A47b *91/06*
U.S. Cl. 16—42 **5 Claims**

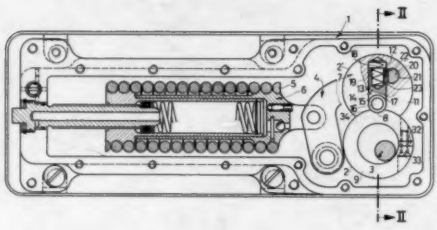


A glide is made adjustable axially in protruding relation to the hollow leg of an article of furniture by indexing means comprising extensions integrally projecting from the top of a housing that is fixed in the bore of the leg, thus forming spring fingers that are yieldably biased into engagement with flat sides of a stud that is threaded into a nut mounted in the bottom of the housing.

3,742,553
DOOR CLOSER

Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. G.m.b.H., Leonberg, Germany

Filed May 15, 1972, Ser. No. 254,796
Claims priority, application Germany, May 15, 1971, P 21 24 194.1
Int. Cl. E05f 3/20
U.S. Cl. 16—55 9 Claims



A housing of a door closer has two openings and accommodates a closing mechanism a shaft of which is to be connected with the door and will then turn in response to movement of the door between open and closed position. Depending on whether the door is a left-hand or a right-hand door, the shaft extends through one or the other of the openings so that the door closer is universally useable with both types of doors. An arresting unit is provided for arresting the shaft against turning when the door is prevented from moving and the arresting unit is accommodated in that one of the openings through which the shaft does not extend.

3,742,554
RECESSED PULL

Richard L. Houtman, Grand Rapids, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

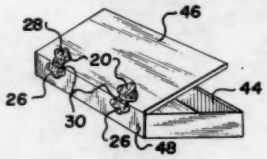
Filed July 15, 1971, Ser. No. 162,823
Int. Cl. A47b 95/02
U.S. Cl. 16—124 18 Claims

A recessed pull includes a cover anchored over and behind an elongated aperture in the header by a trim piece having lock ears which project through the aperture. The lock ears fit through keyed portions of the cover for sliding engagement relative thereto in a plane generally parallel the front wall of the header to position the ears over portions of said cover to secure the cover and trim piece to each other with the front wall sandwiched in between.

3,742,555
CAST HINGE

Karl Hannes, White Plains, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,427
Int. Cl. E05d 9/00
U.S. Cl. 16—128 3 Claims

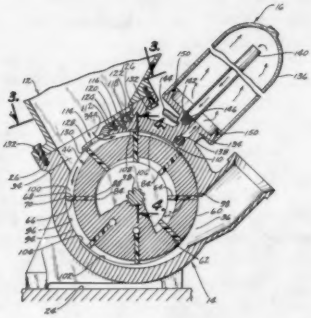


A cast hinged article made by simultaneously casting both parts of the article. A first part of the article is formed with inner projections, and a second part of the article is formed thereover to enclose the projections to provide a hinged pivot. A staking unit which includes a punch then distorts the material in the first part adjacent the projections so that the pivot will be freely movable.

3,742,556
MEAT EMULSION PUMP

Donald L. Reasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed July 2, 1971, Ser. No. 159,120
Int. Cl. A22c 7/00
U.S. Cl. 17—37 9 Claims

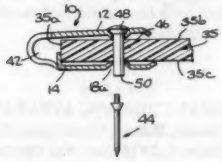


A meat emulsion pump is disclosed herein which is well suited for use with meat processing machines such as frankfurter or sausage stuffing machines. The pump includes means for removing entrapped air bubbles from the meat emulsion and has a vacuum pump operatively connected thereto for removal of the released air from the pump interior. The vacuum pump communicates with the pump cavity between the pump discharge opening and the pump intake opening. The intake opening is positioned so that the emulsion enters the cavity at a location wherein the cavity has already begun to expand or increase. The pump cavity configuration of the pump is such that the meat passes through the pump in a smooth flowing manner without turbulance being created in the product thereby eliminating smear and "fat out" damage. An accumulator means is fluidly connected to the conduit extending from the pump to the meat processing machine. The accumulator means is adapted to supply the pumped emulsion to the processing machine under a constant pressure. The accumulator means also includes means for starting and stopping the pump so that the said constant pressure is assured and so that the emulsion is not recirculated.

3,742,557
HINGE FASTENER FOR CONVEYOR BELTS

Edgar Francois, Wayne, N.J., assignor to Uniroyal Inc., New York, N.Y.

Filed May 14, 1971, Ser. No. 143,537
Int. Cl. F16g 3/02; F16b 35/00
U.S. Cl. 24—33 B 9 Claims

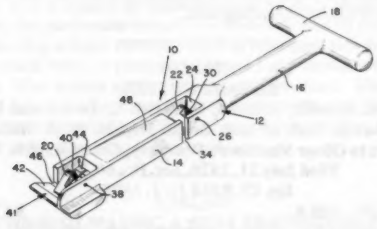


A hinge fastener for conveyor belts is disclosed, including a pair of parallel-plate, interdigitated connectors secured to opposed ends of the belt by a plurality of rivets arranged selectively so as to optimize the strength of the fastener relative to the strength of the belt, and a hinge pin interconnecting the pair of connectors. The connectors are adapted to pivot freely relative to one another over prolonged periods of use without any subsequent loss of freedom or movement therebetween. The plates of each connector are bent inwardly but in a non-aligned fashion at their free end edges so as to bite slightly into the belt body without pinching the same between the bent-in edges. A mandrel adapted to be used in inserting the rivets in the belt for securing the connectors thereto, and self-extracting from both the rivets and the belt body, is also disclosed. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,742,558
STRAP TENSIONER

Joseph D. Lewis, Jr., Chattanooga, Tenn., assignor to Universal Packaging, Inc., East Ridge, Tenn.

Filed Feb. 7, 1972, Ser. No. 224,119
Int. Cl. A43c 11/00; B66f 7/06
U.S. Cl. 24—68 D 10 Claims

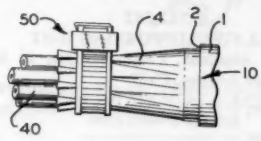


A strap tensioner for gripping longitudinally spaced portions of a strap arranged in encircling relation to an object to be bound with the strap passing through a buckle, the tensioner includes a lever having longitudinally spaced, spring biased clamping dogs mounted thereon and arranged to urge a first portion of the strap towards the buckle and pull a second portion of the strap from the buckle to tighten the strap.

3,742,559
PLASTIC CABLE SUPPORT

Stephen Punako, Bainbridge, and George J. Swanson, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed June 25, 1971, Ser. No. 156,639
Int. Cl. A44b 21/00
U.S. Cl. 24—73 3 Claims

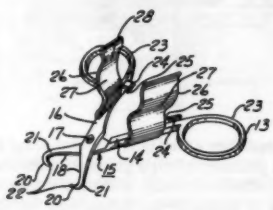


A compressible plastic conduit for receiving a plurality of wires and a plastic belt for compressing the conduit and retaining the wires in a fixed position relative to said conduit.

3,742,560
CLAMPING APPARATUS

Joseph A. Kessler, 103 Morrison Avenue, Punxsutawney, Pa.

Filed Dec. 30, 1971, Ser. No. 213,901
Int. Cl. A44b 21/00; A61b 17/12
U.S. Cl. 24—81 HS 7 Claims

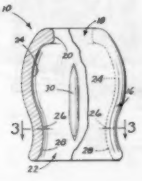


Clamping apparatus adapted for attachment to a mouth gag employed on a patient undergoing oral surgery to support surgical components, such as, an endotracheal valve or tube during oral surgery comprising forceps consisting of two pivotally connected arms each with forward curved beaks for pivotally gripping a jaw separating member of the mouth gag. Each forcep arm is provided with a clamping leg so that upon closure of the forcep arms, locking means are provided to hold them in closed position and support during surgery the surgical component between the clamping legs.

3,742,561
CENTERED FERRULE FOR HOLDING END LOOPS IN WIRE ROPE

Kenneth L. Wernsing, 1931 N.E. 72nd Avenue, Portland, Oreg.

Filed June 1, 1971, Ser. No. 148,380
Int. Cl. F16g 11/00
U.S. Cl. 24—123 W 4 Claims



A ferrule for holding end loops in wire rope comprises a swageable sleeve having on one end an opening for a single

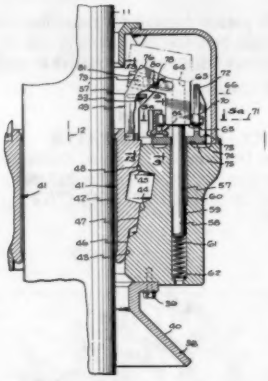
course of rope and on the other end an opening for a double course thereof. The centers of both openings lie on the longitudinal axis of the sleeve. The sleeve is bulged outwardly in the region adjacent the smaller opening to provide a pocket for receiving the dead end of the rope. The smaller opening is defined by a collar having a length predetermined to maintain the live course of the rope in a substantially centered condition. A pair of longitudinal ribs on the inner sidewalls define guideways for guiding the rope within the ferrule.

3,742,562

WELL PIPE SUPPORTING UNIT

George H. Haby, Altadena, Calif., assignor to Abegg and Reinhold Co., Los Angeles, Calif.

Filed Oct. 4, 1971, Ser. No. 186,096
Int. Cl. A44b *21/00*
U.S. Cl. 24—263 DK 16 Claims



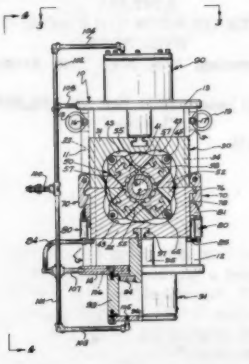
A unit for supporting a well pipe and including a body structure carrying a plurality of pipe gripping slips which are supported by individual vertically movable carriers preferably taking the form of upwardly projecting and vertically moveable posts. These carriers are actuable by an essentially annular cam which is shiftable arcuately about the axis of the gripped pipe by power actuated means. The slips are suspended from the carriers in a manner enabling the slips to move radially outwardly to laterally retracted positions as they are shifted upwardly.

3,742,563

APPARATUS FOR HANDLING CYLINDRICAL MEMBERS

Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.

Filed Feb. 24, 1972, Ser. No. 229,041
Int. Cl. E21b *19/06*
U.S. Cl. 24—263 DH 25 Claims



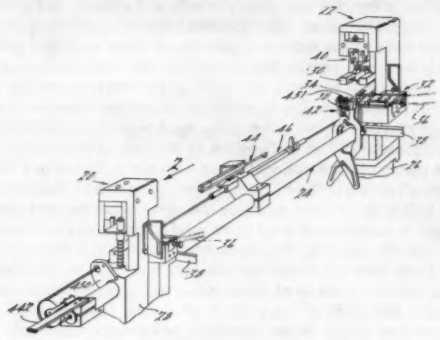
Apparatus for handling cylindrical members such as pipe comprising: a support frame; a housing mounted on the support frame, having a central opening therethrough and being split into two halves transversely movable to and from a first position adjacent each other and a second position apart from each other; and a gripping assembly carried by the housing and disposed in its central opening for alternate gripping engagement and disengagement with a cylindrical member in the first and second positions, respectively. The gripping assembly includes a set of slips and wedges by which the slips are wedged into gripping engagement with the cylindrical member upon the application of force along the axis of the member. The wedges and the housing are provided with cooperable cam apparatus by which the slips may be wedged into tighter gripping engagement with the cylindrical member upon application of a torque to the member.

3,742,564

TERMINAL CRIMPING APPARATUS

Robert M. Dyksterhouse, R.R. 3, Charlevoix, Mich.

Filed Nov. 3, 1971, Ser. No. 195,165
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 12 Claims



The present disclosure relates to an improved wire processing apparatus for making electric wire leads and harnesses including the cutting of the wire or wires, the cutting and stripping of the insulation from the end portions thereof, and the assembly of the components including the connection of the terminals thereto. The apparatus includes spaced head mechanisms each including wire cutting and insulation cutting and stripping means, and terminal securing means, and which holds the wire throughout the operation of these means. Cooperating with the head mechanisms is one or more wire feed means each of which moves through one of the head mechanisms to position an end portion of a wire in another of the head mechanisms and then returns through said one of the head mechanisms to position another portion of the wire in said one of the head mechanisms.

3,742,565

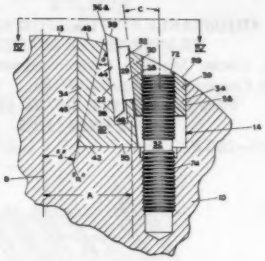
ROTARY CUTTER

Charles E. Boboltz, Belmont; Frederick K. Zwald, and Ralph B. Baldwin, both of East Grand Rapids, all of Mich., assignors to Oliver Machinery Company, Grand Rapids, Mich.

Filed July 31, 1970, Ser. No. 60,025
Int. Cl. B26d *1/12, 1/00*
U.S. Cl. 29—105 R 8 Claims

A plurality of cutting members are individually and detachably mounted on a rotatable drum and arranged in spaced and staggered helical rows. The cutting members include a cutting blade having a plurality of curvilinear cutting edges any one of which may be selected to extend beyond the drum periphery in a work engaging position. A seating block indexes the cutting blade in a work engaging position at a preselected cutting angle with respect to the work piece so that as the drum is rotated, the cutting edge makes a linear "-

plane" on the work surface and in addition permits blade sharpening by a cutting tool operable in a direction parallel to the



drum axis. In so doing, it also serves to automatically index and position each of the cutting edges as each new edge is positioned for use.

3,742,566

PROCESSING OF FINELY DIVIDED PARTICULATE MATERIALS

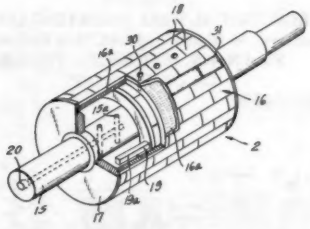
Helmut Reinhardt, Weiss near Cologne; Bernd Brandt, and Albert Peters, both of Wesseling-Berzdorf, all of Germany, assignors to Deutsche Gold- Und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Division of Ser. No. 874,654, Nov. 6, 1969. This application July 12, 1971, Ser. No. 161,791

Claims priority, application Germany, Nov. 8, 1968, P 18 07 714.0

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **12 Claims**



A mass of finely divided material is confined in a chamber. Two rollers are arranged for rotation in the chamber in axial parallelism with one another and define with each other a narrow longitudinally extending gap. At least one of the rollers has a circumferential wall composed of gas-permeable porous material. This one roller is hollow and arranged to communicate with a source of underpressure so that, as the roller rotates, the particulate material is attracted onto its outer surface forming a layer thereon which is subjected to substantial compaction when it passes through the gap between the two rollers. The rollers rotate in opposite direction. The compacted material is removed from the outer surface of the roller or rollers and subdivided into portions of desired size. A roller for use in the apparatus is disclosed.

3,742,567

METHOD OF MAKING A HEAT TRANSFER DEVICE

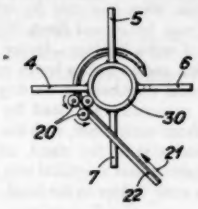
Werner Kaelin, La Jolla, Calif., assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Division of Ser. No. 626,453, March 28, 1967, Pat. No. 3,616,848. This application Sept. 25, 1970, Ser. No. 75,480

Int. Cl. B21d *53/02*

U.S. Cl. 29—157.3 B **3 Claims**

The heat transfer system includes a plurality of wound tube coils fixed within the holes of at least three plates disposed in a radiating axial manner from the axis of the system. The tube



coils are wound helically or spirally and are fixed at three points about the holes through which they pass.

3,742,568

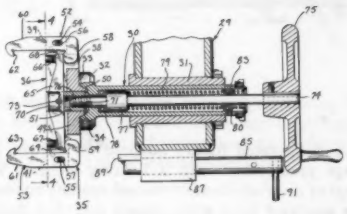
APPARATUS FOR POSITIONING A GEAR

Edwin C. Hahlbeck, Greendale, Wis., assignor to Milwaukee Gear Company, Milwaukee, Wis.

Filed May 25, 1971, Ser. No. 146,715

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 P **9 Claims**



A portable apparatus for locating gear rack segments for mounting in a traction system for a shipboard gantry crane which rides on the T-rail for the gantry crane. The apparatus has a roller which bears against a datum rail parallel to the T-rail for laterally locating a drive pinion on the gantry crane. A clamping jaw and pitch block assembly on the apparatus holds a rack segment so that its mesh with the drive pinion defines a predetermined operating pitch plane while the rack segment is welded to a supporting structure.

3,742,569

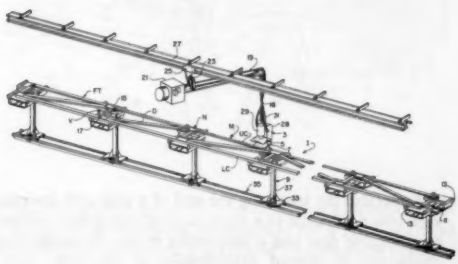
ASSEMBLING AND SECURING APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, 1210 S. Vandeventer, St. Louis, Mo.

Filed Jan. 13, 1971, Ser. No. 106,101

Int. Cl. B23p *19/00*

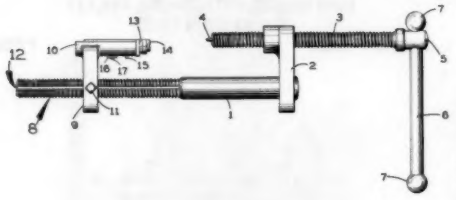
U.S. Cl. 29—200 P **31 Claims**



Apparatus for fabricating long-span, flat trusses of precut wood members, said apparatus having a number of stands

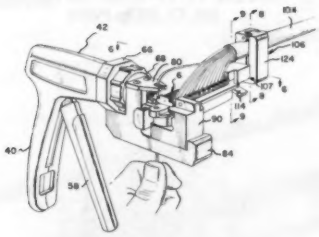
slidably movable along a track for supporting the wood members in position to be secured together by nailing plates driven into the members from above and below by an overhead suspended C-shaped press mounted for universal movement so thacthe press may be moved from stand to stand. Each stand has a pair of work holders adapted to hold the wood members in position and to hold a lower nailing plate in position below the wood members to be driven upwardly. The work holders are mounted on a head for sliding movement toward and away from each other, with the head being rotatable about a vertical axis of the stand, and with each work holder being rotatable about a vertical axis to vary the angular relationship of the work holder to the head.

3,742,570
BEARING REMOVAL FIXTURE
Joseph Felser, Jr., 2208 Segovia Circle, Coral Gables, Fla.
Filed Apr. 6, 1972, Ser. No. 241,786
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 3 Claims



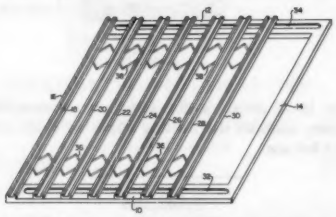
A hand operated fixture adapted to remove bushings or bearings press fitted into a bearing support without the removal of the shaft from its normal running position. The fixture is operated by a screw means threaded therein coaxial with the outer end of the shaft. The bushing is withdrawn by the pressure applied by a half cylindrical sleeve against the rear of the bearing resulting from the hand rotation of the screw against the end of the shaft normally retained in the bearing. The fixture may include a selected number of interchangeable sleeves for bearings of different diameters.

3,742,571
APPARATUS FOR TRIMMING AND INSERTING WIRES
Ronald Carl Brehm, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 15, 1971, Ser. No. 189,571
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 H 9 Claims



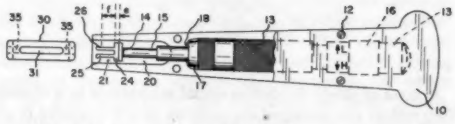
Apparatus for trimming the end of a wire and inserting the wire into a terminal in a multi-contact connector comprises a reciprocable ram and a supporting means for supporting the connector in spaced relationship to the ram. The ram cooperates with a stationary shearing member disposed beside the path of reciprocation of the ram so that upon movement of the ram towards the connector, the wire is moved past the shearing member, its end is trimmed, and the trimmed wire is inserted into the terminal in the connector.

3,742,572
ADJUSTABLE FIXTURE FOR APPLYING TRANSFORMER SPACERS
David N. Lucas, Masury, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 29, 1971, Ser. No. 167,138
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 P 3 Claims



Fixture apparatus for use in applying vertical transformer spacers to a flat surface. The fixture includes a frame and a plurality of movable bars. Slots on the frame guide the movable bars while the fixture is being adjusted. A scissor-like linkage interconnects the movable bars so that all adjacent movable bars have the same separation distance. The transformer spacers are placed into channels in the movable bars with adhesive applied to their exposed surfaces. The flat surface is then placed over the fixture and the spacers.

3,742,573
ELECTRICAL WIRE INSERTING TOOL
Harry Kaufman, 44 Highridge Road, New Rochelle, N.Y.
Filed Nov. 9, 1971, Ser. No. 197,065
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 H 8 Claims

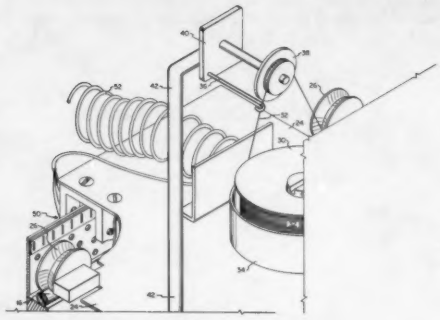


A tool for inserting an electrical wire into a clip type terminal is described. The tool features a removable working blade which is also reversible to provide a cutting edge to remove excess wire. Cutting is effected by applying a controlled impulse to the blade via a bifurcated blade holding adaptor from an automatic impulse generator arranged in an elongated housing.

3,742,574
WIRE BRAID FORMING APPARATUS
Joseph C. Bennett, Lisle; William A. Reimer, Wheaton, and Hilary M. Winters, Forest Park, all of Ill., assignors to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.
Filed Dec. 3, 1971, Ser. No. 204,500
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 MM 20 Claims

A single strand of wire from a supply spool is passed through a carriage-mounted, electromechanically actuated coding wand. As the carriage traverses its line of travel the wire is woven about a fixed linear array of pegs in a desired pattern controlled by a tape reader and timed by preselected electro-

optically actuated coding logic. The end of each wire is automatically routed to a desired position for termination on a



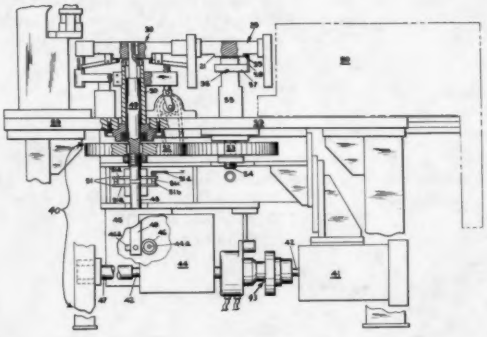
connector. Repeated reciprocating traversing of the carriage permits the fabrication of a wire braid of particular use in wire braid memories.

3,742,575

LATCH INSTALLATION MACHINE

Alden Hardick; Alvin M. Martin, and Delbert House, all of Muskegon, Mich., assignors to Questor Corporation, Toledo, Ohio

Filed June 17, 1970, Ser. No. 153,941
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 F **15 Claims**



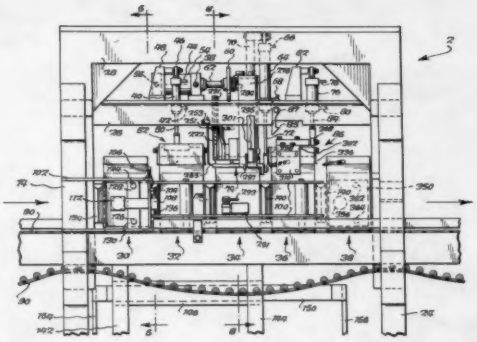
A pair of adjacent, rotating turrets are indexed to stop at various assembly stations, spaced circumferentially about each turret. Four ring holders are mounted on one turret for holding split rings. Four iparts nests are mounted on the other turret for holding lock tabs and latches wich are to be inserted into the rings. A ring loader is positioned at one work station adjacent the first turret for loading a piston ring onto a ring holder. Located at work stations adjacent the second turret are a lock tab loader and a latch loader for loading lock tabs and a latch, respectively, into a parts nest. The two turrets then share a common work station at which a ring holder and a parts nest are in alignment. At this point, a lifter pushes the lock tabs and latch out of the parts nest and into engagement with the ring whereby assembly of the ring and latch is facilitated. A ring unloader is located at yet another work station adjacent the first turret for unloading the completed rings. A clearing station is located at a work station adjacent the second turret for clearing the parts nest of any lock tabs and/or latch which might be left in the parts nest as a result of a defective assembly.

3,742,576

AUTOMATIC HANDLE APPLYING MACHINE

Carl J. Fries, Jr., Philadelphia, Pa., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 851,420, Aug. 19, 1969, Pat. No. 3,597,827. This application Feb. 1, 1971, Ser. No. 111,937
Int. Cl. B23q *7/10*; B23p *19/04*
U.S. Cl. 29—211 R **4 Claims**



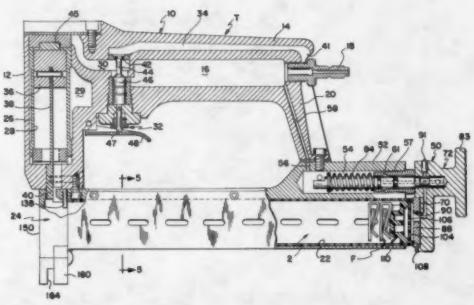
Apparatus for feeding handles including a vibrating feeding hopper for discharging handles from a supply of handles, a slide beam for receiving said handles, and means for transferring said handles to a handle applying machine.

3,742,577

MAGAZINE ASSEMBLY FOR FASTENER DRIVING APPARATUS

Albert T. Buttriss, Westlake, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 76,743, Sept. 30, 1970, Pat. No. 3,672,029. This application Sept. 24, 1971, Ser. No. 183,667
Int. Cl. B23q *7/10*
U.S. Cl. 29—212 R **3 Claims**



A fastener driving apparatus and magazine assembly therefore including an improved construction for a fluid operated fastener driving tool adapted to receive a replaceable prefilled cartridge in the magazine assembly for automatically and sequentially feeding a plurality of fasteners in an aligned side-by-side relation into a predetermined uniform spaced and secured position on a work piece.

3,742,578

METHOD OF MANUFACTURING A REGENERATOR

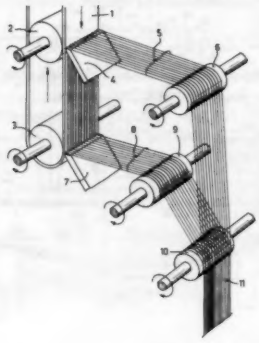
Adrianus Petrus Dirne, and Adrianus Marinus Raymakers, both of Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 849,415, Aug. 12, 1969, abandoned. This application Apr. 16, 1971, Ser. No. 134,850

Claims priority, application Netherlands, Aug. 15, 1968, 6811589

Int. Cl. B23p 17/00

U.S. Cl. 29—419 8 Claims



A regenerator made of wires cut from a band of metal and compressed into layers, and a method and apparatus for making such wires by urging a cutter against the surface of a moving metal band, and a method of making regenerators using such wires.

3,742,579

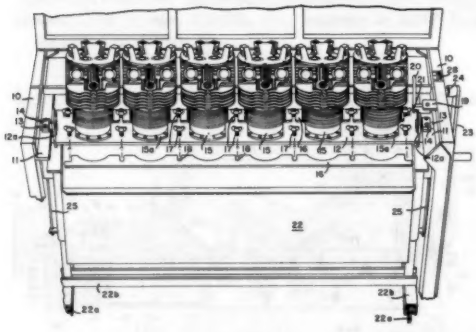
APPARATUS FOR ORIENTING AND SUPPORTING THE CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

Lee Oftedahl, San Jose, Calif., assignor to Charles R. Vanderstelt, San Jose, Calif.

Filed Apr. 21, 1971, Ser. No. 136,042

Int. Cl. B23p 19/04

U.S. Cl. 29—214 3 Claims



An apparatus for supporting the cylinders of an internal combustion engine in a predetermined order during the grinding of the valve seats thereof. The cylinders are clamped to a supporting member which is then rotated so that the cylinders are suspended therefrom. A tank containing an oil or other liquid is then raised so that the valve seats in the cylinders are immersed in the liquid. The valve seats are then ground by a suitable grinding tool. After the valve seats are ground the valves which are supported adjacent to the cylinder from which they were removed are replaced in the cylinders and a valve retaining device is attached to the member supporting the cylinders. The valve retaining device is provided with an adjustable valve engaging means that extends into the cylinders and presses the valves against their seats. The liquid tank is lowered and the cylinder support is turned so that the cylinders are upright. The valve springs are then attached to the exposed portions of the valve stems.

3,742,580

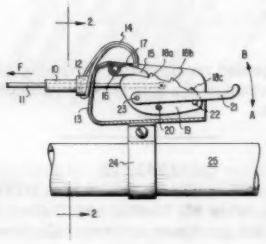
BICYCLE GEAR SHIFT REPAIR

Daniel Andrew Sullivan, Jr., c/o Alcoa Development Community, R.D. No. 2, Rt. 780, New Kensington, Pa.

Filed Apr. 26, 1972, Ser. No. 247,660

Int. Cl. B23p 7/00

U.S. Cl. 29—401 3 Claims



A bicycle gear shifting device including a ratchet plate, a pawl, and a spring blasing the pawl for engaging teeth on the plate, no longer functions properly because the spring is unable to exert an adequate bias force; this condition is repaired by connecting a supplemental spring to the device for biasing the pawl into engagement with the ratchet teeth, without replacing the original spring.

3,742,581

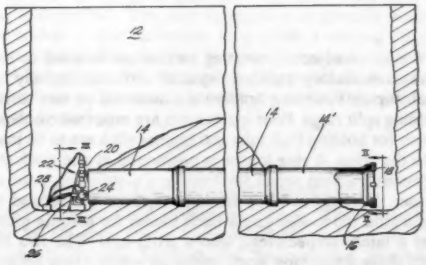
METHOD FOR LAYING A PIPELINE

Roger J. Roodvoeis, Grand Rapids, Mich., assignor to Laser Alignment, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 374, Jan. 2, 1970. This application Sept. 20, 1971, Ser. No. 182,105

Int. Cl. B23q 17/00

U.S. Cl. 29—407 19 Claims



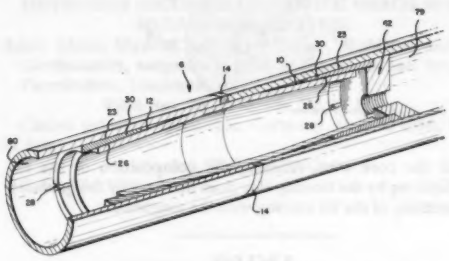
This disclosure relates to a method for laying a pipeline along a preselected rectilinear axis by projecting at least two planes of light through the pipe so that each plane is either coplanar or parallel to the selected axis. Markers in a predetermined relationship on the end of each pipe are aligned with the intersection of the planes with the end of each pipe for aligning the pipes along the preselected axis.

3,742,582

METHOD AND APPARATUS FOR JOINING CONDUIT

William Franklin Broske, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 27, 1971, Ser. No. 183,908
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 6 Claims



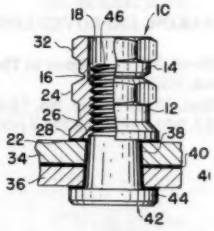
The present invention relates to a method and apparatus for connecting a relatively short length of conduit to an end of a substantially continuous length of conduit. More particularly, the invention relates to a method for connecting relatively short lengths of conduit in end-to-end relationship to form a substantially continuous length of conduit useful for conveying fluidic or gaseous media therethrough, or for providing an electrical conductor of substantially tubular or hollow configuration as distinguished from a solid cylindrical conductor or stranded cable. The invention is particularly suited for joining together lengths of such electrically conducting or media-conveying conduit when it is desirable that the surfaces of the joined conduit lengths be relatively smooth and clean or otherwise free of burrs, nicks, abrasion marks and free of residues or contaminant material such as dust or other liquid or solid contaminants.

3,742,583

METHOD OF USING TWIST-OFF NUT TO ASSEMBLE A JOINT

John O. Devlin, Jenkintown, and William Matievich, Hatboro, both of Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Division of Ser. No. 42,230, June 1, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 218,039
Int. Cl. B23p *17/00*
U.S. Cl. 29—413 1 Claim



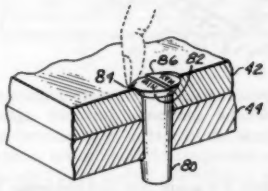
A nut especially adapted for use with joints including a sealant comprises a nut portion having a bearing face, a threaded bore and an external wrenching configuration connected to a collar portion having a free end face, a bore and an external wrenching configuration by a neck portion adapted to rupture at a predetermined torque. To assemble a joint including a sealant, the nut is threaded onto the threaded portion of a mating bolt by applying torque to the wrenching configuration on the nut portion and the joint is allowed to settle so that the sealant re-distributes itself under the load imposed by the nut; thereafter, the nut is re-tightened on the bolt by applying torque to the wrenching configuration of the collar portion. When a predetermined torque is reached, the neck ruptures and the nut and collar portions are separated.

3,742,584

METHOD OF INSTALLING TAPERED FASTENERS HAVING A HIGH PERCENT OF CONTACT SURFACE

Arthur Marcoux, Hermosa Beach, and John H. Stansbury, Los Alamitas, both of Calif., assignors to McDonald Douglas Corporation, Santa Monica, Calif.

Filed July 27, 1972, Ser. No. 275,762
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 5 Claims



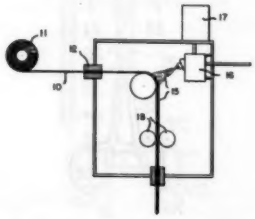
Manufacturing tools and method of making connections between structural members by fitting tapered fasteners into tapered holes with an extremely high percent of contact surface for fatigue resistance and long-life reliability.

3,742,585

METHOD OF MANUFACTURING STRIP FROM METAL POWDER

Joseph M. Wentzell, Remsen, N.Y., assignor to Homogeneous Metals, Inc., Herkimer, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,954
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 8 Claims



A method is provided for forming metal strip from metal powders by spraying the powder as molten metal onto a cooled moving metal foil and thereafter consolidating the foil and sprayed metal by applying pressure.

3,742,586

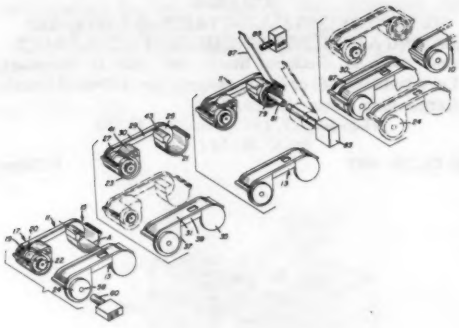
METHOD AND MEANS FOR HANDLING FILM CARTRIDGES

Ernest J. Butler, Rochester; John N. Gade, Rush; Robert J. Herberger, Rochester; James D. Mackay, Webster, and Larry W. Weber, Caledonia, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,831
Int. Cl. B65b *25/00*; B23p *19/04*; B65b *43/00*
U.S. Cl. 29—430 5 Claims

In a continuous process for inserting a scroll of interwound photographic film and backing paper into a film cartridge comprised of two cartridge halves, an assembled-but-unsealed cartridge is presented to a movable cartridge carrying fixture having manipulable clamping members for engaging the

respective cartridge halves. The cartridge, while on the fixture, is incrementally advanced through a series of work stations as the cartridge halves are separated from each other, by



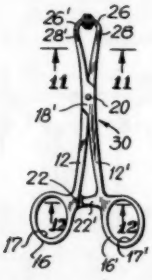
means of the fixture, for scroll insertion purposes. By means of the fixture the cartridge halves are maintained in a fixed predetermined relationship to facilitate re-assembly following insertion of the scroll.

3,742,587

TOWEL CLAMP

John Sklar, 30-04 Woodside Avenue, Long Island City, N.Y.

Division of Ser. No. 10,818, Feb. 12, 1970, Pat. No. 3,646,939.
This application Dec. 15, 1971, Ser. No. 208,497
Int. Cl. B23p *19/00*
U.S. Cl. 29—434 4 Claims



The method of manufacture for a surgical towel clamp or the like is described in terms of the steps of the method to produce such an article in stainless steel from its initial condition as steel splits. The product of the method provides enlarged, opposed jaw ends for a scissor-like instrument, the jaw ends being disposed out of the plans of the instrument.

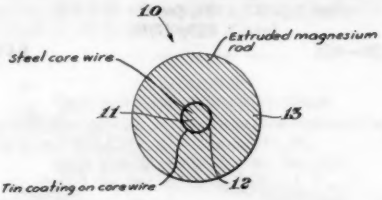
3,742,588

CONSUMABLE MAGNESIUM ANODE WITH A TIN-COATED, FERROUS METAL CORE WIRE

Percy F. George, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1971, Ser. No. 140,672
Int. Cl. B23p *3/10*
U.S. Cl. 29—458 5 Claims

A consumable magnesium anode is provided which is particularly suitable for use in a household water heater. In a preferred embodiment, the magnesium anode is extruded over a steel core wire coated with tin metal. Prior to extrusion, the core wire is heated at a temperature which will convert the tin metal coating to a tin-iron alloy coating having a melting point high enough to permit successful extrusion of the anode rod around the core wire. Altering the composition of the tin metal coating by the heating step does not destroy the galvanic compatibility of the tin coating with the magnesium.

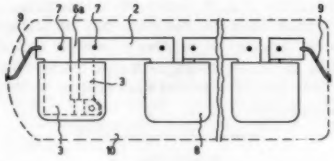


3,742,589

METHOD OF MANUFACTURING SEMICONDUCTOR HIGH-VOLTAGE RECTIFIERS

Gunter Andrae, Hamburg, and Edward Uden, Norderstedt, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 9, 1971, Ser. No. 151,211
Claims priority, application Germany, June 20, 1970, P 20 30 597.9
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 7 Claims



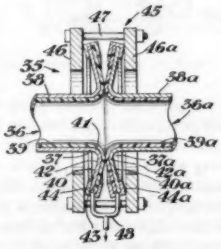
A method of manufacturing a multiple unit high voltage rectifier assembly in which two metal frames with multiple extending segments are superposed so that respective segments are parallel and spaced apart. One group of segments is provided with transverse portions which overlap the free ends of the other group of segments. The rectifier units are soldered between the confronting faces of the segment ends and the assembly is then embedded in a molding insulating material.

3,742,590

METHOD FOR MAKING IMPROVED LINED CONDUIT JOINTS

Burke Douglas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 25, 1970, Ser. No. 75,427
Int. Cl. B21d *39/00*; B23p *11/02*
U.S. Cl. 29—523 4 Claims



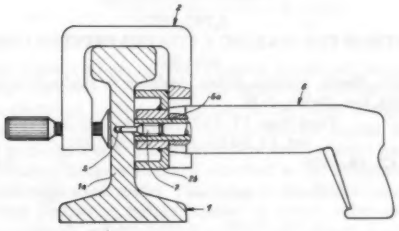
Joints are prepared in ductile metal conduits having thermoplastic lining by affixing the lining to the terminal portion

of the conduit and deforming the conduit and lining simultaneously to form an outwardly extending flange adapted to mate with a like flange wherein the lining material may contact a like lining material of similar conduit end.

3,742,591
METHOD OF SECURING ANCHORING MEMBERS IN HIGH-STRENGTH STEEL

Adolf Ritter, Mauren, and Karl Walser, Waldteile, both of Liechtenstein, assignors to Hilti Aktiengesellschaft Schann, Fuerstentum, Liechtenstein

Filed Nov. 23, 1970, Ser. No. 91,803
Claims priority, application Germany, Dec. 8, 1960, P 19 61 500.0
Int. Cl. B23p *19/02*
U.S. Cl. 29—525 **2 Claims**

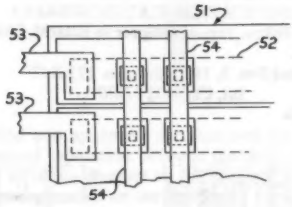


In fixing anchoring members in high-strength steel members, such as securing bolts in railroad rails, a blind bore having a diameter slightly smaller than that of the diameter of the anchoring member, is formed in the high-strength steel member, then, after aligning the anchoring member with the blind bore, it is driven into the bore using an explosive charge to supply the driving force.

3,742,592
ELECTRICALLY ALTERABLE INTEGRATED CIRCUIT READ ONLY MEMORY UNIT AND PROCESS OF MANUFACTURING

Joseph D. Rizzi, Los Gatos, and Lloyd D. Fagan, Santa Clara, both of Calif., assignors to Intersil Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 54,531, July 13, 1970, abandoned. This application May 3, 1971, Ser. No. 139,705
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **6 Claims**

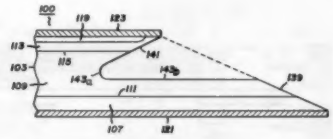


An integrated circuit read only memory matrix comprised of transistors having emitter and collector contacts connecting rows and columns. Selected base-emitter junctions are electrically shorted by the application of successive reverse current pulses therethrough while monitoring junction resistance to thereby establish single PN junctions at such selected connections.

3,742,593
SEMICONDUCTOR DEVICE WITH POSITIVELY BEVELED JUNCTIONS AND PROCESS FOR ITS MANUFACTURE

Curtis R. Smith, Auburn, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,125
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **4 Claims**

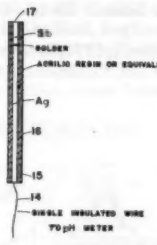


A semiconductive element is disclosed having forward and reverse voltage blocking junctions which are positively beveled. One beveled edge surface of the semiconductive element lies entirely inwardly of the tangential projection of the remaining beveled edge surface. Beveling is accomplished by forming a single beveled edge surface across both junctions and thereafter relieving an edge portion of the semiconductive element adjacent the negatively beveled junction to form a second beveled edge surface which is positively beveled.

3,742,594
ANTIMONY ELECTRODES AND METHOD OF MANUFACTURING SAME

Israel Kleinberg, Winnipeg, Manitoba, Canada, assignor to Harco Electronics Ltd., Winnipeg, Manitoba, Canada

Filed May 10, 1971, Ser. No. 141,916
Int. Cl. H01s *4/00*
U.S. Cl. 29—592 **4 Claims**



Short fine rods of antimony are soldered to one end of a fine silver wire which is then coated with a plastic sheath for insulation and stiffening purposes. The antimony and silver wire electrode is supported vertically with the antimony uppermost and the liquid resin is applied at the sides of the distal end of the antimony and flows down covering the antimony and silver wire but leaving the tip face of the antimony exposed. This process eliminates micro crevices between the resin and the antimony tip.

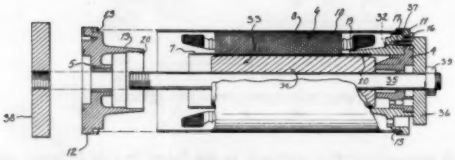
3,742,595
METHOD OF MANUFACTURING A SUBMERSIBLE MOTOR

Robert E. Lykes, Troy, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Dec. 21, 1970, Ser. No. 100,000
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **8 Claims**

A stator unit for an induction motor is encapsulated in a plastic and has an inner tubular lining which is coaxially aligned with the rotor bore through a set of bearings and bearing housing. The stator unit is fixed to a tubular unit frame,

which is secured by adhesive in tenon grooves of upper and lower end frames. The upper end frame is secured by screws through holes in the upper bearing housing and end frame. In the method of assembly, the upper bearing is placed on an alignment fixture, which has pins adapted to fit the screw holes in the upper bearing housing and end frame. An arbor is inserted through the rotor bore of the upper bearing housing and through a corresponding bore in the end fixture and the



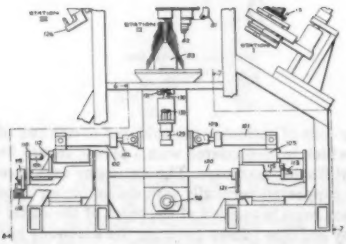
upper end frame is placed over the arbor and fitted to the fixture pins. Then the stator unit is assembled over the arbor and into the tenon grooves of the upper end frame, where adhesive is applied. The lower end frame is similarly located on the other side of the motor, a clamping device is secured over the lower end, and the assembly is cured. The encapsulant is injected and after further curing, rotor and cover assemblies are substituted for the arbor and fixture.

3,742,596

APPARATUS AND METHOD FOR FORMING SHAPED INSULATORS AND FOR DEVELOPING COILS AND FOR INSERTING INSULATORS AND COILS INTO A MAGNETIC CORE

Dallas F. Smith, and Richard B. Arnold, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Mar. 1, 1971, Ser. No. 119,618
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **19 Claims**



Method and apparatus for forming shaped insulators and for developing coil turns into coil groups and inserting the insulators and coils into preselected slots of a magnetic core. The insulators are automatically formed at an insulator-forming station by an assembly including control mechanism for providing a series of insulators corresponding to predetermined slots of the core. Coil turns for the coil groups are generated about a coil turn-forming assembly of a winding head mechanism at a turn-forming station. Insulator and coil insertion tooling is movable between the insulator-forming station, to receive formed insulators; the turn-forming station, to receive coil turns; and an insertion station, at which insulators and coil turns are inserted from the insertion tooling into the magnetic core.

The insulator and coil insertion tooling is mounted for pivotal movement about a horizontal axis so that it swings through a generally vertical plane. The insulator-forming station, the turn-forming station and the insertion station intersect this plane. The turn-forming assembly and the tooling are aligned during coil turn generation and some previously generated turns are received in the tooling as other turns are generated. Also the tooling is rotatable, relative to the coil turn-forming assembly, so that turns for each electric phase may be received in the tooling angularly displaced from other phases.

Additionally the apparatus has two winding head mechanisms for easily generating turns for two phases from different wire.

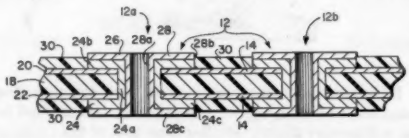
Furthermore the insulator-forming control mechanisms can be set so that the insulator-forming assembly will provide insulators in predetermined series which correspond to different series of slots of the magnetic core.

3,742,597

METHOD FOR MAKING A COATED PRINTED CIRCUIT BOARD

Dana L. Davis, Malden, Mass., assignor to Hadco Printed Circuits, Inc., Derry, N.H.

Filed Mar. 17, 1971, Ser. No. 125,313
Int. Cl. B41m *3/08*; **H05k** *3/00*
U.S. Cl. 29—625 **9 Claims**



A printed circuit board includes a circuit portion and a contact portion. Solder coats copper in and adjacent each of a plurality of holes in the circuit portion. An insulating overlay covers the circuit portion except at the solder-coated portions.

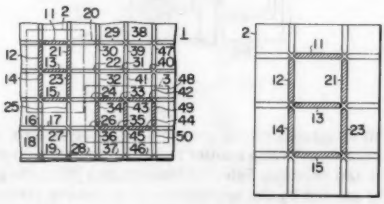
To construct this board, holes are drilled through a copper clad, laminated plastic sheet. Then resist is applied to all portions of the board except adjacent the holes. Two successive plating processes deposit copper and solder to the board at the holes to produce solder-coated pads at each hole and a solder-coated, copper plating through each hole. The next process step includes depositing a second resist to selected areas of both board portions before etching the board to form contacts and circuits. After plating the contacts, the board is finished by applying a plastic resin overlay to the entire circuit portion except at the pad areas.

3,742,598

METHOD FOR FABRICATING A DISPLAY DEVICE AND THE DEVICE FABRICATED THEREBY

Sumio Nishida, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1971, Ser. No. 111,847
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **1 Claim**



A method for fabricating a display device comprising the steps of forming a plurality of light-emitting diodes in a

semiconductor wafer with a lattice pattern, and then dividing a unit of the seven light-emitting diodes which constitutes an 8-shaped pattern from the semiconductor wafer.

3,742,599

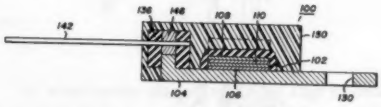
PROCESSES FOR THE FABRICATION OF PROTECTED SEMICONDUCTOR DEVICES

Richard J. Desmond, North Syracuse, and Paul W. Koenig, Clyde, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 782,183, Dec. 9, 1968. This application Dec. 14, 1970, Ser. No. 97,693

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **2 Claims**



A foot portion is bent up from a planar, electrically conductive heat sink, and a header rigidly mounting circular cross-section electrical leads positions one of the leads in engagement with the foot portion. A semiconductor crystal is attached to the heat sink with a soft solder and a contact having an upstanding flange is similarly attached to the semiconductor crystal with a soft solder. The flange is attached to an electrical lead positioned by the header. A pliant, substantially fluid impervious material, such as silicone rubber, is cured around the semiconductor crystal and a casement is then molded to the leads and heat sink to form a shock and strain resistant semiconductive device. The header is in one form enclosed by the casement, but in alternate forms may be partially or entirely stripped after molding.

3,742,600

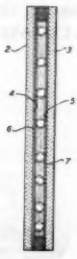
METHOD FOR MAINTAINING THE SEPARATION OF PLATES

Francis C. Lowell, Huntington Station, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Filed July 26, 1971, Ser. No. 166,038

Int. Cl. H01s *4/00*

U.S. Cl. 29—592 **10 Claims**



A method and apparatus are disclosed for maintaining a predetermined separation between the walls of light valves, especially when the pressure on the inside of the walls may be less than the pressure on the outside of the same walls (atmospheric pressure). To maintain this separation, a plurality of small chemically inert, non-deformable beads are added to the fluid suspension in the light valve. These beads which have at least one dimension which is the same as the desired spacing between the walls distribute themselves throughout the suspension to prevent the pressure differential from causing the walls to come closer together than the predetermined distance between them and thereby help to assure the proper operation of the light valve.

3,742,601

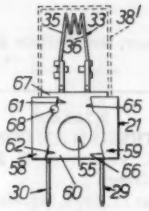
METHOD OF MAKING AN ELECTRICAL APPARATUS

Joseph Gino Raffaelli, Grada Hills, and Reed Albert Palmer, Los Alamitos, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 160,827, July 8, 1971. This application June 19, 1972, Ser. No. 263,793

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 **12 Claims**



Electrical apparatus including a resistance wire ignitor for gas ranges or otherwise wherein the wire is made of molybdenum disilicide ($MoSi_2$). The $MoSi_2$ is very brittle, but has an exceedingly long life. The $MoSi_2$ may have a useful life well over 18 months, continuous use in an oxidizing atmosphere, as compared to 3 days continuous use for platinum under the same conditions. A number of problems were solved according to this discovery. Shock resistance was improved by use of dead soft electrical connectors having necked down portions to take a set rather than damage the brittle wire. A good 310 stainless steel connector to wire bond was discovered. The bond is made with an alloy of 18 percent nickel and 82 percent gold. The ignitor also has a snap-on shield.

3,742,602

CUTLERY AND FLATWARE

Terence Jack Brumwell, Sheffield, England, assignor to Spear & Jackson (Ashberry) Limited, Sheffield, England

Filed Mar. 31, 1971, Ser. No. 129,916

Claims priority, application Great Britain, Mar. 31, 1970, 15,245/70

Int. Cl. B25g *3/10*

U.S. Cl. 30—340 **14 Claims**

A method of manufacturing items of cutlery and flatware, or of components of items of cutlery and flatware, which includes the forming of a handle part from metal, colouring at least a part of said handle part by a colouring process, and machining a pattern at the coloured surface so that the applied colouring contrasts with the colour of the metal.

3,742,603

RETICULATE FOIL AND ITS APERTURE SHAPE FOR ELECTRIC DRY SHAVER

Goichi Yamaoka, Okaya, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan

Filed Aug. 24, 1970, Ser. No. 66,516

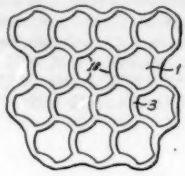
Claims priority, application Japan, Sept. 12, 1969, 44/72163

Int. Cl. B26b *19/04*

U.S. Cl. 30—346.61 **3 Claims**

The invention relates to an electric dry shaver, and more

particularly to the construction of the reticulate foil used by



said electric dry shaver, the aperture shape and its arrangement.

3,742,604

DENTAL PROSTHESIS WITH CONCEALED HOOK

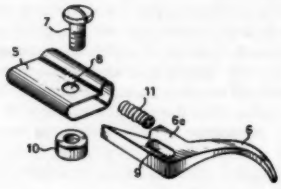
Victor Elie Narboni, 39, rue de la Fontaine Blanche, 91 Savignu sur Orge, France

Filed June 17, 1971, Ser. No. 153,953

Claims priority, application France, June 19, 1970, 7023938; Dec. 8, 1970, 7044023

Int. Cl. A61c *13/22*

U.S. Cl. 32—5 **2 Claims**



Dental prosthesis having one or more false teeth arranged to be removably secured to adjacent natural teeth in the mouth, the prosthesis being secured by a pair of hooks or calliper which are arranged to hook around the natural teeth, one hook may be fixed in relation to the prosthesis whilst the second may be pivotally mounted and sprung to act towards the fixed hook, the pivotal axis of the sprung hook being at right angles to the working face of the teeth.

3,742,605

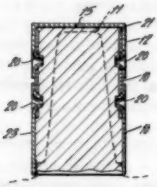
DENTAL IMPRESSION ACCESSORY AND METHOD

Abraham J. Cooper, 1 DeKalb Avenue, Brooklyn, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,160

Int. Cl. A61c *9/00*

U.S. Cl. 32—17 **1 Claim**



A tubular metal sleeve is fitted over the prepared tooth of which an impression is to be taken. The sleeve is trimmed to the height of the tooth. A cap member is secured to the sleeve by crimping. Impression material is placed within the capped sleeve and the assembly forced over the tooth. The cap prevents the sleeve from injuring the gums as the impression is made.

3,742,606

HOLDING AND PULLING DEVICE FOR DENTAL INSTRUMENTS

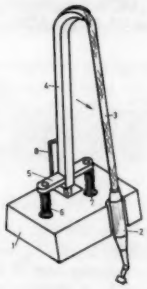
Otto Fleer, Bensheim Auerbach, and Erich Heubeck, Bensheim/Zell, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 11, 1970, Ser. No. 71,549

Claims priority, application Germany, June 2, 1970, P 20 26 839.7

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **12 Claims**



A device is provided for holding and pulling back hand operated dental instruments connected with tubes and cables, such as drills and syringes. The device has a swinging arm carrying a part of the conduit and used for the delivery of the instrument. An end of the arm is swingably connected with a support and is subject to a release force in such manner that when the instrument is grasped the arm can be inclined in the working direction and sidewise thereto opposite the action of the force. The present invention is particularly characterized in that by suitably selecting the support and/or the releasing members the release force has a component which in case of a side deviation is greater than in case of inclination in the working direction.

3,742,607

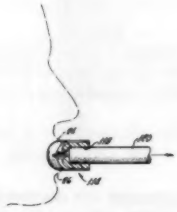
SUCTION MOUTHPIECE

Wesley Grant Johnson, 3815 E. Casselle Avenue, Orange, Calif.

Continuation-in-part of Ser. Nos. 88,565, Nov. 12, 1970, abandoned, and Ser. No. 121,262, March 5, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,044

Int. Cl. A61c *17/04*

U.S. Cl. 32—33 **24 Claims**

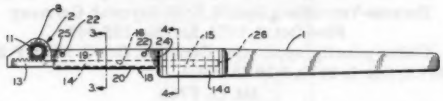


A body formed with a network of intercommunicating grooves is provided with an exhaust duct that communicates with all of the grooves and is adapted to be connected to a vacuum source. The network of grooves is placed against the user's face bridging his slightly parted lips so as to receive saliva. Vacuum drawn through the exhaust duct causes a number of air streams to flow through the several grooves along and against the outer surface of the skin so that salvia positioned there by the user is entrained in these air streams and collected in the exhaust duct for remote disposal.

3,742,608
MANUALLY OPERABLE PLAQUE REMOVING DENTAL TOOL

Norman A. Jones, 4591 W. Streetsboro Road, Richfield, Ohio

Filed Apr. 21, 1972, Ser. No. 246,193
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 10 Claims

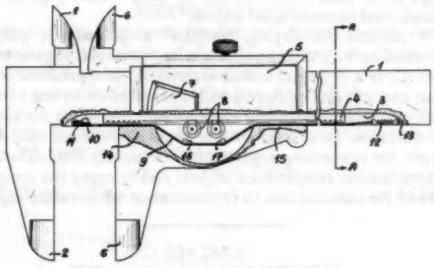


An elastomeric plaque removing cup is detachably supported by its base near one end of an elongated handle which can be gripped and manipulated by the hand of an operator to engage the rim of the cup with the teeth in selected positions at, and slightly below, the gum line. The cup is oscillated about an axis, which extends laterally of the handle, by means of a transmission mechanism driven by a push button on the same side of the handle as the cup. The push button is positioned endwise of the handle so that it can be engaged and operated to oscillate the cup through a small angle by natural flexures of the thumb to and fro generally endwise of, and parallel to, the palm of the hand while the handle is held in the hand. The chuck is constrained from continuous unidirectional rotary motion. The parts of the device can be disassembled readily for cleaning and each part is easily cleanable when the device is disassembled.

3,742,609
MEASURING INSTRUMENT

Jean-Pierre Jeannet, Lausanne, and Jean-Pierre Leuba, Renens, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed May 5, 1971, Ser. No. 140,454
Claims priority, application Switzerland, May 20, 1970, 7436/70
Int. Cl. G01b *5/00*
U.S. Cl. 33—143 M 14 Claims

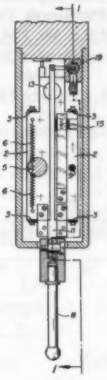


A measuring instrument comprising a pole or body portion including a rack recessed in a slot in one edge of the body. The rack is protected by a flexible strip secured at one end to a tensioning spring. A slide block is manually moved along the pole and includes a pinion which meshes with the rack. The flexible strip is diverted around the pinion by two guide pins.

3,742,610
MEASURING DEVICE OF TWO DIMENSIONAL DISPLACEMENTS

Michel Calame, Grand-Lancy, Switzerland, assignor to Societe Genevoise D'Instruments De Physique, Geneva, Switzerland

Filed Jan. 12, 1971, Ser. No. 105,809
Claims priority, application Switzerland, Feb. 16, 1970, 2176/70
Int. Cl. G01b *3/22*
U.S. Cl. 33—172 E 7 Claims

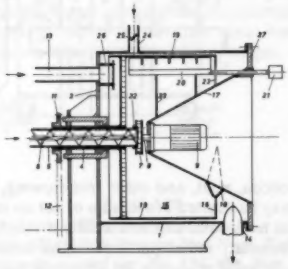


The invention concerns a two dimensional displacement measuring device, comprising a mechanical feeler fixed to a lateral measuring lever hinged on a movable member of a deformable parallelogram about an axis which is perpendicular to the direction of displacement of this movable member and two detectors delivering electrical signals the amplitude of which varies with displacement. These detectors are actuated the one by the said movable member and the other by the said measuring lever. Adjusting means are provided for the measuring pressure of the feeler both axially and laterally as well as restraining means canceling selectively the sensitivity of the feeler either axially or laterally.

3,742,611
DRYING PROCESS AND SPRAY DRYER FOR CARRYING OUT THE PROCESS

Hans Koller, Muttenz, Switzerland, assignor to Buss AG, Basel, Switzerland

Filed Aug. 2, 1971, Ser. No. 168,117
Claims priority, application Switzerland, Aug. 5, 1970, 11875/70
Int. Cl. F26b *5/08*
U.S. Cl. 34—8 13 Claims



Apparatus and method for drying suspensions, solutions and free flowing materials in a drying chamber in a cylindrical housing wherein the material is fed directly into the inlet

against a rotating impeller and a scraping means is used against a rotating drum surrounding the impeller which limits the size of the drying chamber, the dried material moving past a displacement element within the drum which curves out conically from the impeller toward the end of the cylindrical housing.

3,742,612

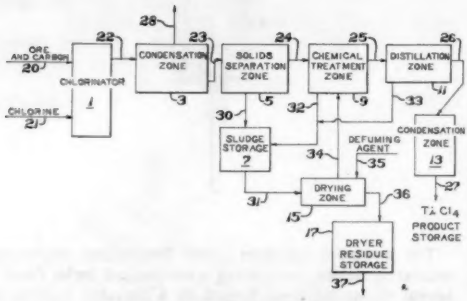
TREATMENT OF TITANIUM TETRACHLORIDE DRYER RESIDUE

William C. Pefferman, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 130,331, April 1, 1971, Pat. No. 3,696,519. This application June 28, 1972, Ser. No. 266,944

Int. Cl. C01g *23/00*

U.S. Cl. 34—9 **8 Claims**



The production of titanium tetrachloride by chlorination of titaniferous ores is described. Fuming of titanium tetrachloride dryer residue is inhibited by adding alkaline earth metal hydroxide to the dryer means before exposing the residue to air.

3,742,613

APPARATUS FOR CONTACTING A FREE-FLOWING PARTICULATE SOLID WITH A FLUID

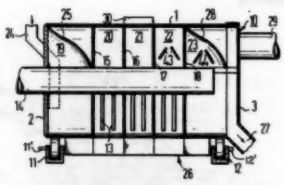
Carl Hans Von Gimborn, Emmerich, Germany, assignor to Probat-Werke von Gimborn & Co. KG, Emmerich, Germany

Filed Dec. 28, 1971, Ser. No. 213,107

Claims priority, application Germany, Jan. 5, 1971, P 21 00 248.2

Int. Cl. G09d *3/10*

U.S. Cl. 34—109 **10 Claims**



Coffee, cocoa, malt, and other free-flowing, granular solid materials may be roasted in a stream of hot air in a drum rotating about its horizontal axis and axially divided into compartments by annular, radial partitions. The compartments are connected in axial sequence by channels outside the drum cavity which communicate with the compartments through apertures in the circumference of the drum. The solid material is fed to the axially first compartment and discharged from the axially last compartment, the dwell time in each compartment being determined by the spacing of the partitions and the effective flow sections of the channels. Hot air is blown into each compartment from nozzles mounted on a stationary support centered in the drum, the discharge orifices of the nozzles being submersed in the granular material.

3,742,614

THERMAL TREATMENT OF POWDERED OR GRANULAR MATERIAL

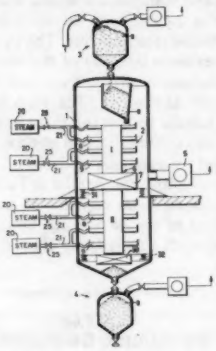
Dieter Bettermann, D-5022 Junkersdorf, and Alois Schomisch, D-5302 Widdig, both of Germany, assignors to Leybold-Heraeus-Verwaltung GmbH, Koln-Bayental, Germany

Filed Oct. 4, 1971, Ser. No. 185,949

Claims priority, application Germany, Oct. 2, 1970, P 20 48 487.1; Oct. 2, 1970, P 20 48 494.0

Int. Cl. F26b

U.S. Cl. 34—147 **11 Claims**



A device for the thermal treatment of powdered or granular materials, including a container, a plurality of substantially circular trays mounted one above the other in said container for the sequential transfer of material downwardly from an outlet region of one tray to an inlet region of a next lower tray, a temperature control system for selectively controlling the temperatures of the trays, and a vibrational drive vibrating the trays selectively and adjustably for moving material on the trays from their inlet regions to their outlet regions with preselected material layer depths.

A method for drying granular or powedered polymer material having a crystallization temperature region below 200° C, in a drying chamber maintained at a pressure of less than one torr and equipped with a material-receiving surface, which method includes forwarding the material on the surface by vibration in a layer of less than a predetermined layer depth, for preventing agglomeration when the material is in its crystallization temperature region, and bringing the temperature of the material into its crystallization temperature region.

3,742,615

VEHICLE-DRYING APPARATUS

Uberto Capra, Alte Ceccato, Italy

Filed Feb. 18, 1972, Ser. No. 227,502

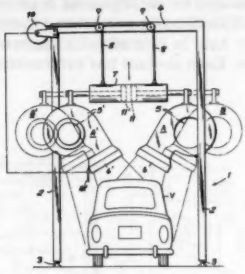
Claims priority, application Italy, Apr. 14, 1971, 23179 A/71

Int. Cl. F26b *19/00*

U.S. Cl. 34—229 **7 Claims**

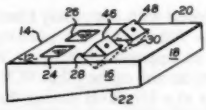
A portal frame, movable with reference to a vehicle to be dried, carries a pair of nozzles which are mutually offset in the

direction of motion and are trained upon opposite slides of a vehicle entering the frame. The nozzles can be swung and/or



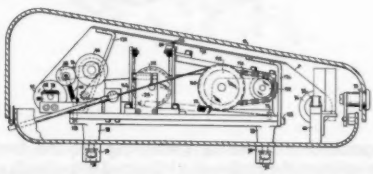
shifted to blow upon the top of the vehicle in one traverse and upon its lateral surfaces in another traverse.

3,742,616
EDUCATIONAL DEVICE
Aaron Heller, 23 West 68 Street, New York, N.Y.
Filed May 8, 1972, Ser. No. 251,374
Int. Cl. G09b *1/06*
U.S. Cl. 35—8 R **7 Claims**



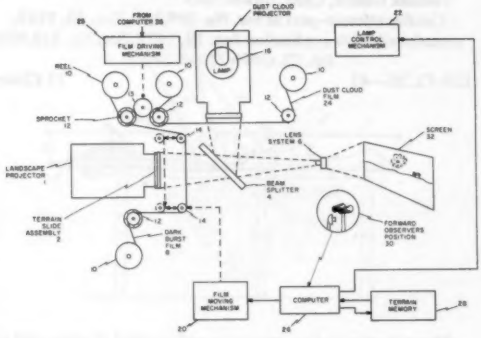
An educational device comprising a box having a mirror surface therein disposed at a predetermined angle and a viewing surface disposed above the angled mirror surface and containing two pairs of adjacent slots therein with one pair of slots being disposed in a row and being angled substantially parallel to the mirror surface while the other pair of slots are disposed in an adjacent row substantially parallel thereto. The slots are also disposed in columns so that one slot comprises a viewing slot and the corresponding slot in the other row comprises a display slot. Means, such as cubes having indicia on each face thereof are removably mountable in the display slots for providing a pair of visible adjacent images at the viewing slots.

3,742,617
TESTING MACHINE
Guido Perrella, Montreal, Quebec, and Robert Genest, Outremont, Quebec, both of Canada, assignors to Testograph Limited, Lachine, Quebec, Canada
Filed Dec. 16, 1970, Ser. No. 98,630
Claims priority, application Canada, May 21, 1970, 083,305. The portion of the term of this patent subsequent to Mar. 28, 1989, has been disclaimed.
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 R **5 Claims**



A device for the application and recording of written tests such as word or idea association; question and answer; evocative or suggestive tests; aptitude etc. Pre-printed tests on paper rolls are inserted into the machine and the tests sequentially appear in a slot or window which remains open for a predetermined length of time during which an answer may be written on the test paper. A timer control adjusts the timing for the slot opening and closing. A control button allows an examinee to move on to the next question should he be able to reply in less than the alloted time and the length of time taken to reply is automatically recorded on the test paper. An attachment is available for ink blot or other visual tests.

3,742,618
FORWARD OBSERVER TRAINER
Robert J. Entwistle, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 3, 1971, Ser. No. 177,734
Int. Cl. F41g *11/00*
U.S. Cl. 35—25 **4 Claims**

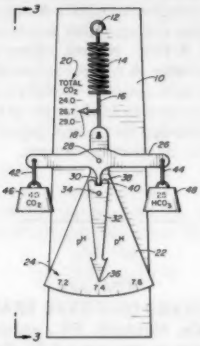


Artillery shell and bomb bursts may be simulated using motion picture techniques by projecting bursts on a projected landscape. To simulate dark colored ground level bursts, a film bearing the image of a burst is moved into focus in the optical system of a landscape projector. Air bursts are simulated in the same way with the additional step of lighting a second film bearing a dust cloud image and which is permanently focused in the optical path of an auxiliary projector. The image projected by the auxiliary system is combined with that of the landscape projector to show an aerial burst having a dust cloud beneath it on the projected landscape.

3,742,619
TEACHING AID
Nancy L. Jenks, 6214 Allott Avenue, Van Nuys, Calif.
Continuation-in-part of Ser. No. 194,416, Nov. 1, 1971, abandoned. This application June 29, 1972, Ser. No. 267,391
Int. Cl. G09b *23/02*
U.S. Cl. 35—30 **6 Claims**

A device to visually represent to a student a multi-variable mathematical equation which employs the use of a beam

balance assembly which is connected to a supporting housing



through a spring. the beam balance operating through a jointed pointer.

3,742,620

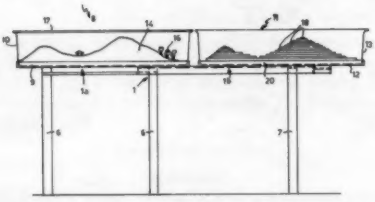
METHOD FOR CONSTRUCTING THREE-DIMENSIONAL MODELS AND DEVICE THEREFOR

Ernst Knoll, Vlotho, Weser, Germany, assignor to Relief-Technik GmbH, Chur, Switzerland

Continuation-in-part of Ser. No. 889,111, Dec. 30, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 218,961

Int. Cl. G09b *25/06, 29/12*

U.S. Cl. 35—41 **11 Claims**



There is provided an apparatus and method of using said apparatus for demonstrating the inter-relationship of a landscape, and the contour lines representing said landscape in two- and three-dimensional representation.

In the method of three-dimensional sand or clay model of a landscape is produced, a transparent plate is supported over and free from said model and contour lines connecting points of the same height on the model are drawn upon the said plate using a substantially ablative transfer material, said contour lines are transferred onto transfer receiving material slabs and layers of said material corresponding to said contour lines are produced by cutting along said contour lines. The contour slabs are then stacked upon each other to give a three-dimensional representation of the model.

In a further modification, the contour slabs are colored in such a manner that at least adjacent slabs are of a different color.

Upon compression of the contour model by a transparent plate, a two-dimensional contour representation is again visible.

3,742,621

STUDENT RESPONSE RECORDING SYSTEM

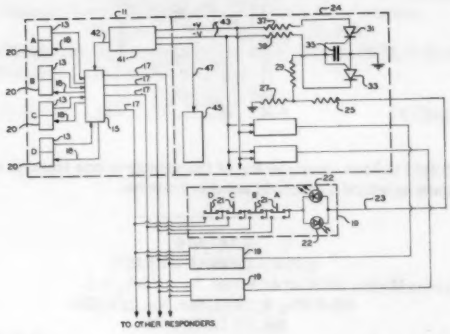
John B. Torres, Jr., Conklin, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,387

Int. Cl. G09b *5/00*

U.S. Cl. 35—48 R **7 Claims**

An improved printer for recording student responses at an instructor's station in an educational teaching and testing apparatus of the type wherein students are provided with individual responder units with which they may respond to questions presented by an instructor is shown. Carbon film resistors are operated for short periods in an overrated condition to record marks indicating correct and incorrect responses on thermal paper held in contact with the resistors by a gravity pressure plate. Each student has two resistors assigned which



are in a series circuit with oppositely biased SCR's. A correct answer causes a voltage of one polarity and an incorrect answer that of an opposite polarity to be output from the responder to turn on one or the other SCR. The voltage across the SCRs is kept at a low level during the response time and then raised to accomplish printing after which it is interrupted to turn off the SCRs in preparation for a new response.

3,742,622

SPORTS SHOES

Adolf Dassler, 8422 Herzogenaurach, Am Bahnhof, Germany

Filed July 19, 1971, Ser. No. 163,831

Claims priority, application Germany, July 21, 1970, P 20 36 062.7

Int. Cl. A43b

U.S. Cl. 36—2.5 AM **9 Claims**

A sports shoe including cushioning for the foot of the wearer in which the cushioning is formed by a sheath of weldable plastics film material, the space within the sheath, which may be filled with a foam, being externally closed by at least one weld applied at the edge of the sheath.

3,742,623

BOOT WITH HEEL PROTECTION

Henry Edmond Groothaert, Milan, Ill., assignor to The Servus Rubber Company, Rock Island, Ill.

Filed May 12, 1972, Ser. No. 252,662
Int. Cl. A43b *1/10*
U.S. Cl. 36—4 3 Claims

A rubber or like plastic boot having a felt lining is provided at the lower heel area with a permanently bonded wear element insert which is preferably nylon fabric having a rubber backing fused into the felt surface at the heel area.

3,742,624

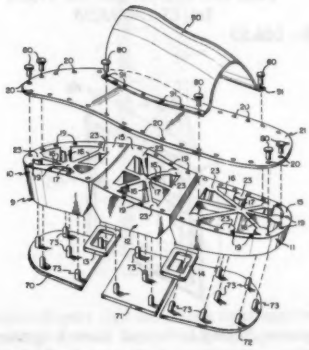
Patent Not Issued For This Number

3,742,625

ARTICULATED CLOG

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed July 3, 1972, Ser. No. 268,728
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 10 Claims



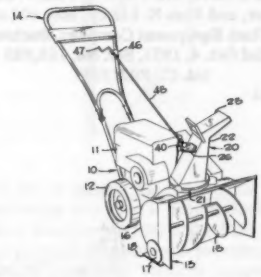
A new and improved, articulated clog construction which may be assembled by an unskilled person using only a simple tool, such as a hammer, is disclosed herein. The new clog is comprised of three injection molded, hollow, rib reinforced plastic body elements which are articulated to one another by means of elastomeric loops or bands. A one-piece, contoured, flexible insole is attached by pins, rivets, nails or the like, to the body elements. Three separate sole elements of molded neoprene or similar durable material are attached to the lower surfaces of the body elements. Advantageously, each of the sole elements has pin-like projections formed integrally therewith for locking insertion into mating sockets formed in each of the body elements. A vamp is secured to the insole of the new clog by the pins, rivets, nails or the like used in the attachment of the insole to the upper surfaces of the articulated body elements.

3,742,626

SNOW THROWER

Ray G. Ellis, Brentwood, Mo., assignor to Atlas Tool & Manufacturing Company, St. Louis, Mo.

Filed Dec. 16, 1971, Ser. No. 208,820
Int. Cl. E01h *5/00*; F16h *1/04*
U.S. Cl. 37—43 R 10 Claims



This snow thrower includes a chute deflector which may be selectively rotated and locked by a rack and pinion mechanism operated by a remotely controlled crank shaft. The rack and pinion mechanism includes a rack quadrant attached to one side of an inclined deflector and rotatable about an axis coincident with the axis of rotation of the deflector. The pinion is mounted at one end of the crank shaft and the rack is provided by an arcuate row of equally spaced apertures on the quadrant which are engageable by the pinion to rotate the deflector. Selected rack apertures are elongated to receive the pinion whereby to lock the deflector in position. The crank shaft is lengthwise spring-loaded to urge the pinion into the lock position.

3,742,627

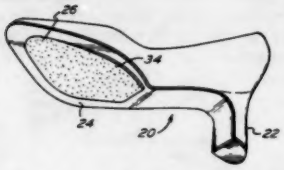
METATARSAL PAD

Maxwell H. Schneider, 5452 Northumberland St., Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,761
Int. Cl. A43b *13/18*
U.S. Cl. 36—28 3 Claims

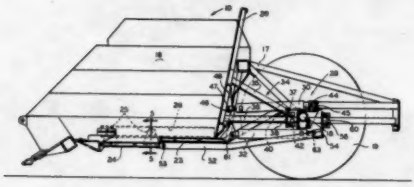
An external metatarsal pad is provided for a woman's high heel shoe. The pad comprises a flexible resilient material hav-

ing a substantially uniform maximum thickness in the rear portion of the pad. The pad is gradually and uniformly tapered at



its forwardmost end from the area of maximum thickness. The pad is secured to the outer lower surface of the sole of the shoe. The tapered portion acts to inhibit the viewability of the pad while the area of maximum thickness acts to cushion the metatarsal area of the foot of the wearer of the shoe.

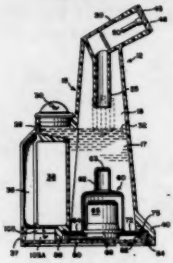
3,742,628
STABILIZER AND POSITIVE EJECTION MECHANISM FOR EARTH MOVING APPARATUS
Melvin L. Walser, and Ross N. Lindly, both of Lubbock, Tex., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 4, 1971, Ser. No. 185,985
Int. Cl. E02f *5/00*
U.S. Cl. 37—124 **10 Claims**



A stabilizer and positive ejection mechanism for a self-loading scraper having a movable end gate and rolling bottom door. The mechanism provides one horizontal trackway portion extending forwardly and another rearwardly of the scraper axle. A rigid stabilizing structure attached to the rear of the end gate is guided on the front trackway portion and a link member attached to the door is guided on the rear trackway portion. This arrangement permits actuating cylinders to be close-coupled to the stabilizer structure for low-center, direct pushing action in opposite directions with a minimum of side thrust and a maximum applied force.

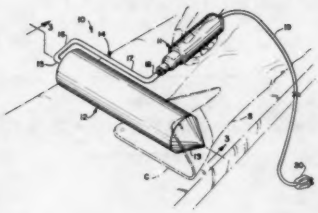
3,742,629
PORTABLE ELECTRIC HAND-HELD CLOTHES STEAMER
Emil Robert Plasko, Dayton, Ohio, assignor to Micro Devices Corp., Dayton, Ohio
Filed Aug. 30, 1971, Ser. No. 176,008
Int. Cl. A47j *51/00*
U.S. Cl. 38—69 **8 Claims**

A portable hand-held electric clothes steamer has a one-piece body or housing with an integral fill opening intermediate a water chamber and a combined steam chamber and water trap, the position of the water inlet opening defining the maximum water level. Electric neon indicators are provided for showing when the unit is plugged in and also for showing when the unit has run dry. Provision is made for use of the



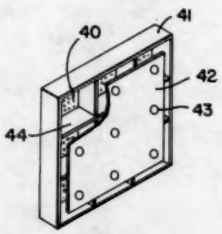
steamer, in one embodiment, in either domestic or European current.

3,742,630
ROLLING IRON
Thomas J. Camarco, Lakeview Drive, Mahopac, N.Y.
Filed Mar. 3, 1972, Ser. No. 231,623
Int. Cl. D06f *75/00*
U.S. Cl. 38—100 **21 Claims**



A rolling iron comprising a handle, means rotatably supporting a cylindrical iron on said handle, and new heating means and support therefor in said iron for heating said iron.

3,742,631
ILLUMINATED DISPLAYS
Ernest Hasala, 608 W. Hillsdale Boulevard, San Mateo, Calif.
Filed Oct. 8, 1970, Ser. No. 79,024
Int. Cl. G0f *13/36*
U.S. Cl. 40—106.53 **5 Claims**



A composite display is formed from a mosaic of substantially contiguous luminous images each obtained by viewing one of a coordinated pattern of separated and smaller luminous apertures through more than one texture element of a transparent textured screen. A program sheet having an edited pattern of variable light transmission values is shifted ino coincidence with and relative to the aperture pattern to provide change in or animation of the mosaic by modifying the luminosity of the several apertures in the aperture pattern.

3,742,632
SIGN, GREETING CARD, DISPLAY OR LIKE VISUAL ARTICLE

James E. Bollbach, Freeport, L. I., and Jerome A. Moss, New York, both of N.Y., assignors to Jerome A. Moss, New York, N.Y.

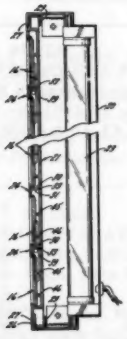
Filed Mar. 27, 1972, Ser. No. 238,406
Int. Cl. G09f 7/22
U.S. Cl. 40—128 11 Claims

An article such as a sign, poster, advertisement, greeting card, display or like visual article, either flat or three dimensional, is hung on a horizontal support string. Said article has oppositely outstretched portions provided with simulated gripping means at the ends thereof. Freely depending strings are attached at their upper ends to said gripping means, by means invisible from the front side of the article. The portion of the support string between the gripping means is located at the back side of said article and is not visible from the front side of said article, thereby creating the illusion that the subject depicted at the front side of said article is holding onto string ends to keep from falling down, and said depending string ends look like ends of horizontal strings. The depending strings and the supporting strings are made of similar appearing string material. The article is hung on or otherwise mounted on the portion of the support string which is located at the backside of said article.

3,742,633
ILLUMINATED DISPLAY SIGN

Bernhard Palm, Rockford, Ill., assignor to Shaplite Displays, Inc., Rockford, Ill.

Filed June 11, 1971, Ser. No. 152,300
Int. Cl. G09f 07/08, 13/04
U.S. Cl. 40—133 B 9 Claims

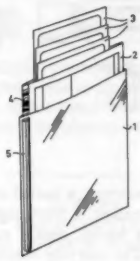


An illuminated display sign includes a light impervious box-like base housing electric lamps and having an open face covered by a translucent panel upon which is mounted a plurality of display characters each with contrasting opaque and translucent areas shaped to define an intelligible figure. The display characters comprise generally rectangular wafers which are arranged in interlocking edge-to-edge engagement to convey an illuminated message without light escaping between adjacent wafers. Vertically supporting each row of wafers on the panel is a support rail formed integrally with the panel. A leaf spring attached to the case at the end of each row acts to urge the wafers into interlocking light-tight engagement. Parallel ribs integrally formed with and extending horizontally and outwardly from the panel between adjacent rails act to support the wafers within a defined vertical plane, and the upper rib also functions as a fulcrum to aid in the insertion and removal of individual wafers from a row. In an alternative embodiment, a modular panel is constructed of several rectangular strips stacked edgewise on top of each other and held together by support rails with rearwardly protruding posts which are heat staked across the overlapping edges of adjacent strips to hold the strips together.

3,742,634
INDEX CARD, FILE OR SIMILAR FLAT ELEMENT FOR A FILING SYSTEM

Johan Van Haaften, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed July 12, 1971, Ser. No. 161,623
Int. Cl. B42f 21/00
U.S. Cl. 40—359 1 Claim

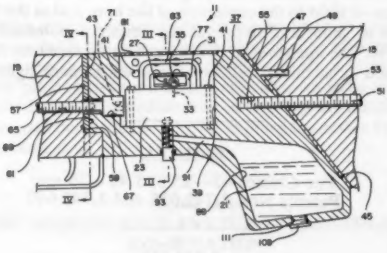


Index card, file or similar flat element for a filing system, which element along one edge is provided with a code which can be read in a direction parallel to the main plane of the element. For this purpose the element is provided along one edge with a reflector of transparant material comprising at the position of the code a surface which makes an acute angle with the main plane of the element, in which surface the code is reflected.

3,742,635
HEATER DEVICE FOR A FIREARM

Billy D. Hutto, 107 Ann Avenue, West Helena, Ark.

Filed Apr. 28, 1972, Ser. No. 248,628
Int. Cl. F41c 27/00; F41d 11/20; A61f 7/06
U.S. Cl. 42—1 R 6 Claims



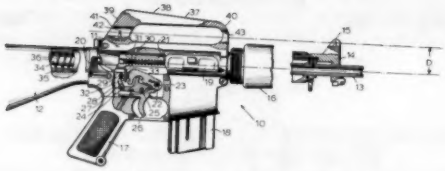
A heater for warming the firing mechanism of a firearm and the hands of the user. One embodiment of the heater includes structure similar to well known hand warmers having fuel suspended adjacent a heater element which includes a catalytic substance to support combustion of the fuel vapors. The heater is positioned between the stock and the firing

mechanism of the firearm and is adaptable to existing firearms. An alternate embodiment of the heater includes an electric heater element which radiates heat as electric current passes therethrough. A battery is included which is suitably coupled to the electric heater to force electric current therethrough.

3,742,636
FIREARM HAVING A CARRYING HANDLE AND ASSOCIATED REAR SIGHT

John F. Dealy, Rockville, and Michael W. York, Gaithersburg, both of Md., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Dec. 13, 1971, Ser. No. 207,012
Int. Cl. F41g *1/06, 11/00*
U.S. Cl. 42—1 S **11 Claims**



A firearm having a receiver, a barrel connected to the forward portion of the receiver, a front sight connected to the forward portion of the barrel, and a carrying handle connected to the receiver. The carrying handle has a grip member portion that is adapted to be used for carrying the firearm and a forward mounting member portion depending downwardly from the forward portion of the grip member portion. The forward mounting member portion has its lower portion connected to the receiver and serves to mount the forward portion of the grip member portion to the receiver. Another rearward mounting member portion depends downwardly from the rearward portion of the grip member portion and the lower portion of the rearward mounting member portion has its lower portion connected to the receiver to connect the rearward portion of the grip member portion to the receiver. Each mounting member portion has an aperture extending through it from its forward to its aft surfaces and a rear sight is partially located within the aperture of the rearward mounting member portion so that the line of sight from the rear sight through the aperture of the forward mounting member portion to the front sight is located closer to the centerline of the bore of the firearm than is possible with present firearms that have receiver mounted carrying handles. The close location of the line of sight to the centerline of the bore makes the firearm easier to shoot and improves the accuracy potential of the firearm. The apertures in the two mounting members can also be used as auxiliary sighting means under poor light conditions.

ERRATA

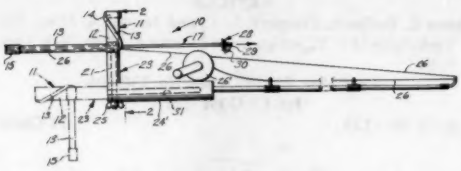
For Classes 42—25 and 42—76 see:
Patents Nos. 3,742,638 and 3,742,640

3,742,637
FISHING SLINGSHOT

Peter Badovinac, 4069 Dille Avenue, Cleveland, Ohio

Filed Nov. 8, 1971, Ser. No. 196,620
Int. Cl. A01k *87/00, 91/02*
U.S. Cl. 43—19 **2 Claims**

A device for discharging an arrow with artificial lure and line attached consists primarily of a frame member removably mounted to a fishing rod and including an elastic band means

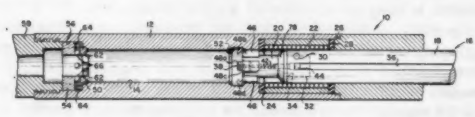


for propelling the arrow or a sinker and bait hook.

3,742,638
BOLT ACTION ASSEMBLY

James M. Archer, 2917 Grand Avenue, Billings, Mont.

Filed July 17, 1970, Ser. No. 55,838
Int. Cl. F41c *15/00, 11/00*
U.S. Cl. 42—25 **12 Claims**

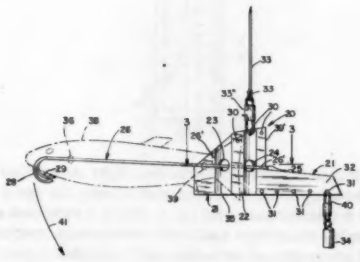


A bolt action assembly for firearms comprising a bolt slidably mounted in an action frame bore. The bolt is closed and substantially solid in cross section at its rearward end and is fitted with a removable bolt head at its forward end. The bolt rides in a ball bearing bushing suitably positioned in the action frame bore. Extractors are provided on the bolt head for gripping a cartridge rim and are opened through the force or reaction between the extractors and the cartridge rim. Enlarged diameter portions in the action frame bore permit the extractor to open to grip the cartridge rim in the chambering phase and to release the cartridge casing in the ejection phase. The internal surfaces of the bore other than at the enlarged portions normally maintain the extractors in the closed position. The bolt head has locking lugs thereon which cooperate with lugs on a recoil ring to maintain the bolt in the closed position. The recoil ring and bolt head are removable to allow substitution of another bolt head and recoil ring accommodating a cartridge of a different caliber.

3,742,639
FISH HOOK DEVICE

LaVerne D. Butts, Minnewaukan, N. Dak.

Filed Aug. 17, 1971, Ser. No. 172,427
Int. Cl. A01k *83/06, 85/00*
U.S. Cl. 43—42.39 **3 Claims**



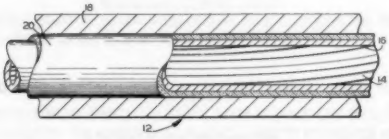
A fish hook device comprising a plate member with a hook extending horizontally therefrom and detachably mounted thereto for attaching a bait fish to the stem of the hook. The

plate member has a plurality of bores along the top for adjustably attaching a fish line thereto. The plate also has a plurality of bores along its lower edge for adjustably attaching a weignt thereto. The adjustment bores are provided to balance the plate member in the water with the stem of the hook extending horizontally.

3,742,640
COMPOSITE FIREARM BARREL

Darrel M. Thomsen, Princeton, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 14, 1971, Ser. No. 143,373
Int. Cl. F41c *21/02*; F41f *17/08*
U.S. Cl. 42—76 R **5 Claims**

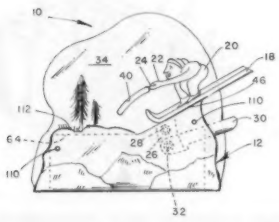


A composite barrel incorporates means for resisting the radial distribution of heat originating in the barrel bore.

3,742,641
TOY BANK

Franklin H. Green, 200 Yale St., Roslyn Heights, L. I., N.Y.

Filed June 8, 1972, Ser. No. 260,905
Int. Cl. A63h *33/00*
U.S. Cl. 46—4 **9 Claims**



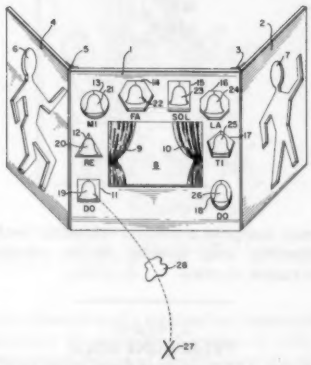
A toy bank comprising a collapsible enclosure and having a coin-carrying figure pivotally disposed upon one of the walls of the enclosure for movement toward and away from an opening provided in a top panel of the enclosure, the coin-carrying figure having capacity for casting a coin through the opening in the top panel for confinement within the enclosure.

3,742,642
PROJECTILE GAME APPARATUS WITH TONE PRODUCING TARGET

Henriette J. Zegers-Ten Horn, 5004 Rodman Road, Washington, D.C.

Filed June 22, 1971, Ser. No. 155,526
Int. Cl. A63b *71/02*
U.S. Cl. 46—13 **8 Claims**

A projectile target having three planar sheets hinged to form a generally upright screen with the central panel having a plurality of different geometrically shaped through apertures with different tone producing bells mounted therein, and a central puppet threatre opening with draw curtains on the sides. Each of the tone producing means is adapted to be struck by a projectile thrown at them to produce a tone of the musical scale as indicated by the indicia associated therewith, which is different from the ones produced by the other bells, so that a relationship may be established from the from the ones produced by the other bells, so that a relationship may be established between a physical representation, the geometric shape, and a musical tone of the standard scale, the sound of the bell struck. The side sheets have through openings in the shape of human figures for further games and the teaching of

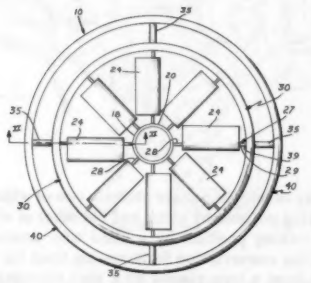


geometric relationships. Distances involved with the throwing of a bag or the like projectile at the bells and the abstract relationship of musical scales tones with physical configurations are taught to students or players of the game, particularly blind people.

3,742,643
FLYING DEVICE

Charles David Keith, 17926 N. Shore Estates, Spring Lake, Mich.

Filed May 5, 1972, Ser. No. 250,657
Int. Cl. A63h *33/18*
U.S. Cl. 46—74 D **11 Claims**



A flying device adapted to be thrown manually in a spinning fashion includes a hub, an intermediate ring and an outer ring. Between the inner and intermediate rings are a plurality of variable pitch radially extending vanes adapted to be adjusted as desired. The intermediate and outer rings are coupled by support members to allow the user to grasp the device by holding the outer ring.

3,742,644
PUPPET MANIPULATOR AND PUPPET-MANIPULATOR COMBINATION

Barbara Williams, Kanarraville, Utah

Filed Mar. 10, 1971, Ser. No. 122,763
Int. Cl. A63h *7/00*
U.S. Cl. 46—126 **5 Claims**

A puppet manipulator and a manipulator-puppet combination and improvement wherein the manipulator comprises an elongate member releasably secured, at a beveled edge thereof, with the associated puppet. The manipulator can be

inverted to accommodate both sitting and standing positions of the user. The releasable securement means associated

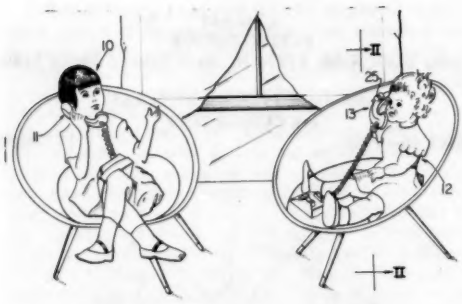
therewith may comprise a suitable releasable back structure, bracket assembly, snap fastener means, releasable fabric securement means, et cetra.

3,742,645

TELEPHONE DOLL

William J. Casey, 153 Rensselaer Road, Essex Falls, N.J.

Continuation of Ser. No. 863,629, Oct. 3, 1969, abandoned.
This application July 2, 1971, Ser. No. 159,521
Int. Cl. A63h *33/26*
U.S. Cl. 46—242 **5 Claims**



A plurality of telephones are utilized, one of which is held in normal talking position by a doll and the other of which is held in normal talking position by a child who controls, by her telephone, the conversation forthcoming from the doll which is playable from a tape played by a tape recorder contained within the telephone set.

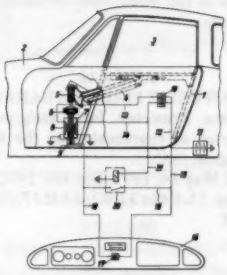
3,742,646

ARRANGEMENT FOR ELECTRICALLY ACTUATED WINDOWS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

Ferdinand Piech, Stuttgart-Nord, Germany, assignor to Firma Dr. -Ing. H.C.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed June 9, 1971, Ser. No. 151,221
Claims priority, application Germany, June 9, 1970, P 20 28 195.2
Int. Cl. E05f *11/38, 15/16*
U.S. Cl. 49—28 **6 Claims**

A switch arrangement for electrically actuated windowpanes of vehicles, especially motor vehicles in which the drive motor is controlled by switches arranged in the passenger space and includes window actuating switches and a safety device with a slip clutch which responds and interrupts the drive when a predetermined resistance to movement of the windowpane occurs; the slip clutch, however, is bypassed automatically when the window-actuating switch energizing the



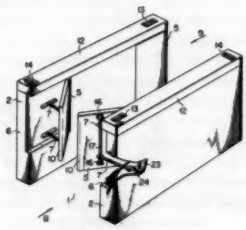
window drive motor in the window-opening direction is closed.

3,742,647

GATE EQUIPMENT

Teiji Tomita, Kamakura, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 3, 1971, Ser. No. 149,763
Claims priority, application Japan, June 9, 1970, 45/56477
Int. Cl. E05f *15/12*
U.S. Cl. 49—35 **8 Claims**



Gate equipment constituting at least one gate comprising a pair of parallel partition members defining a limited passageway in a specified area, for example, on the premises of a railroad station, shafts provided in said paired partition members and a pair of gate members disposed on the facing sides of said paired partition members, hinged at one end to said shafts and designed to open or close the passageway by rotation about the shafts whereby, when the passageway is to be closed, the free ends of said paired gate members are brought to rest in a state projecting from the hinge shafts in the direction in which there is admitted an object trhough the passageway. The drive mechanism for each gate member includes a pair of pivotally connected arms coupled respectively to a gate member and to a motor such that the arms are linearly aligned when the gate member is closed.

3,742,648

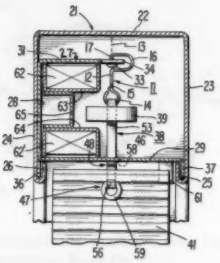
PIVOT SUSPENSION FOR RIBBON-LIKE LOUVER

Edward C. Streeter, Jr., 128 Heck Avenue, Ocean Grove, N.J.

Filed Aug. 22, 1971, Ser. No. 173,804
Int. Cl. E06b *7/08*
U.S. Cl. 49—74 **4 Claims**

A pivot suspension for a ribbon-like louver, particularly for an array of louvers used in a controllable solar screen, in

which the bearing surface of each pivot suspension intersects the turning axis of the respective louver to reduce friction, and



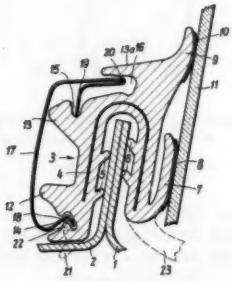
a resilient portion of the suspension loops around the bearing surface back to the axis to hold the louver in tension.

3,742,649

SUPPORT FOR DECORATIVE MOLDINGS ON DOOR OR WINDOW FRAMES PROVIDED WITH RUBBER OR PLASTIC SEALSTRIPS

Hans Dochnahl, Willich, Germany, assignor to Draftex GmbH, Postfach, Germany

Filed Mar. 30, 1971, Ser. No. 129,329
Int. Cl. E06b 7/22
U.S. Cl. 49—441 **6 Claims**



A support for decorative strips for window and door frames is disclosed. The support comprises a U-shaped sealing strip of rubber or plastic. One leg of the sealing strip is provided with an inner groove with two holding lips, and with a outer groove with another pair of holding lips. The end portions of the decorative strip are shaped into a S-like form and are inserted between the respective holding lips of the inner and outer grooves.

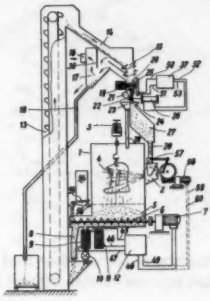
3,742,650

CONTROL SYSTEM FOR THE CIRCULATORY SYSTEM OF A SHOT BLASTING APPARATUS

Max E. Graf, Karlsruhe; Helmut Roth, Hohenwettersbach, and Jurgen W. Von Fahland, Karlsruhe, all of Germany, assignors to Badische Machinenfabrik GmbH, Karlsruhe, Germany

Filed July 29, 1971, Ser. No. 167,219
Claims priority, application Germany, Apr. 7, 1971, P 21 16 942.6
Int. Cl. B24c 3/14, 7/00
U.S. Cl. 51—5 **25 Claims**

A blasting apparatus for recuperating and cleaning shot which includes a circulatory system for the shot, in which the contaminated shot traverses one or several cleaning installations whereby the cleaned shot is fed to centrifuging wheels while inadequately cleaned shot is caused to traverse once again the cleaning installations; at least one measuring device is provided in the circulatory system for determining the degree of contamination of the shot whereby the measuring device is connected with a control device that so acts by way



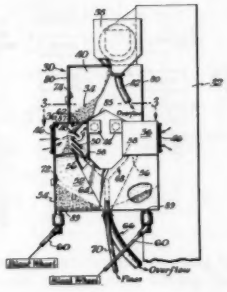
of an actuating element and a mechanical control element and thereby influences the circulatory system in such a manner that a predetermined degree of cleanliness of the shot is maintained at the inlet of the centrifuging wheels.

3,742,651

ABRASIVE THROWING WHEEL DISTRIBUTION SYSTEM

Russell L. Rowe, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,452
Int. Cl. B24c 7/00; B07b 4/02
U.S. Cl. 51—9 **10 Claims**



An abrasive throwing wheel distribution system operates without the use of a conventional distribution screw by including a plurality of separating units symmetrically arranged for receiving an abrasive particles containing mixture. The abrasive particles are removed from the mixture and fed to abrasive throwing wheels.

3,742,652

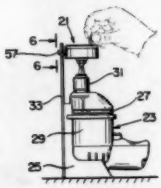
DRILL SHARPENER

Sherwood G. Enders, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 6, 1970, Ser. No. 17,109
Int. Cl. B24b 3/26
U.S. Cl. 51—73 R **16 Claims**

A drill sharpener including a stationary body having a plurality of different sized, generally parallel openings therethrough adapted to receiver drill bits of different diameters. A rotatable grinding wheel is disposed beneath the body and has a cupped, conical sharpening surface aligned with the openings. Indexing means, which may be adjustable, is pro-

vided which engages at least one flute of a drill bit positioning one of the openings and properly positions the cutting land of that bit relative to the sharpening surface. The device may



either be an attachment for another tool such as a drill, or it may be embodied in a self-contained unit having its own prime mover.

3,742,653

CONTROL DEVICES FOR THE RADIAL DISPLACEMENT OF SHAFTS

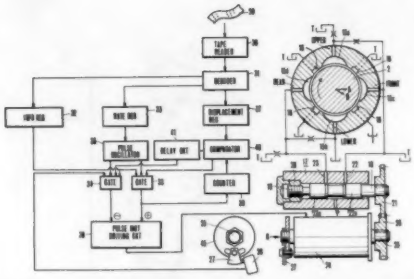
Kimio Kano, Aichi-ken; Kelichi Nakamura, and Shojiro Niitaka, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi Pref., Japan

Filed July 13, 1971, Ser. No. 162,238

Claims priority, application Japan, Aug. 5, 1970, 45/68834

Int. Cl. E05d *15/22*; F16c *17/16*

U.S. Cl. 51—165.9 **8 Claims**



In a control device for the radial displacement of a shaft supported in a fluid bearing, the bearing including a plurality of circumferentially spaced apart pressure pockets surrounding the shaft and a control valve for creating a pressure differential in the pressure of the pressurized fluid admitted into selected ones of the pressure pockets for radially displacing the shaft, there are provided electromotive means for operating the control valve, and a digital control for the electromotive means for regulating the speed and quantity of the radial displacement of the axis of the shaft.

3,742,654

ABRASIVE GRINDING WHEEL CONSTRUCTION

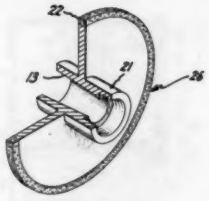
Kenneth A. Darrow, Sprakers, and Louis E. Hibbs, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,960

Int. Cl. B24d *5/02*

U.S. Cl. 51—206 R **3 Claims**

Abrasive grinding wheel construction is described in which the wheel disc (exclusive of the abrasive rim) and hub are made as a single member to eliminate eccentricity a) during



molding of the abrasive rim thereto and b) upon mounting the completed wheel.

3,742,655

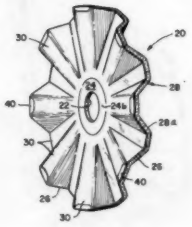
ABRADING WHEEL

Lloyd R. Oliver, Algonac, Mich., assignor to L. R. Oliver, Inc., Algonac, Mich.

Continuation-in-part of Ser. No. 54,888, July 15, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,790

Int. Cl. B24d *5/10*

U.S. Cl. 51—356 **28 Claims**



An abrading device particularly adapted for grinding rubber, plastic and various other nonmetallic materials, comprising a single-piece, relatively thin disk member having a flat planar hub portion and a serpentine-like undulating peripheral portion displaced out of the plane of the flat disk and formed to provide a series of radially extending vane-like disk portions between the edge and hub portions of said member which serve as pumping vanes to circulate cooling air or other fluid about all surfaces of the disk and across the outer edge thereof to dissipate heat and to prevent the buildup of ground particles on the disk surfaces. An abrasive in the form of a carbide grit or other suitable abrasive material is bonded to the peripheral face of the wheel.

3,742,656

COUPLING DEVICES

Robert James Amos, Tudor Lodge, Leven Avenue, Bournemouth, England

Filed Dec. 18, 1968, Ser. No. 784,672

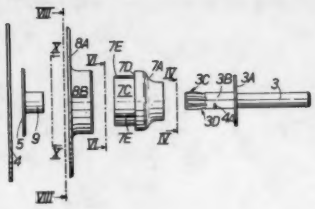
Claims priority, application Great Britain, Dec. 18, 1967, 57,404/67

Int. Cl. B24d *17/00*

U.S. Cl. 51—376 **12 Claims**

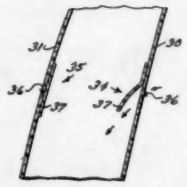
Coupling device for releasably connecting a first and a second member for rotation about a common axis, for example a powered shaft and an abrasive disc in a sanding tool. The

first member comprises a rotatable shaft splined at one end for engaging an internally ribbed socket in the second member. A



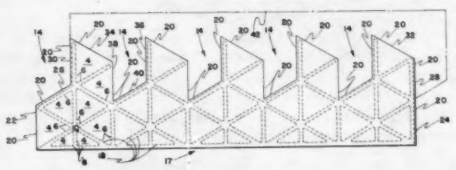
slidable collar fits around the shaft and may be used for disengaging the second member from the shaft.

3,742,657
REVERSIBLE AIR SUPPORTED STRUCTURE
Robert S. Price, Lexington, Ky., assignor to Irvin Industries, Inc., Greenwich, Conn.
Filed Oct. 1, 1971, Ser. No. 185,738
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **3 Claims**



An air supported structure having a reversible wall portion symmetrical about a given axis.

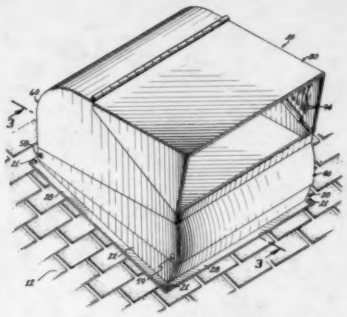
3,742,658
INFLATABLE GEODESIC TENT
Bruce F. Meyer, 828 So Windsor No. 1A, Salt Lake City, Utah
Filed Oct. 8, 1971, Ser. No. 187,706
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **1 Claim**



An inflatable Geodesic structure comprising a plurality of triangular surfaces disposed in edge-to-edge relation and having air cells extending along the intersections between adjacent surfaces. Both structure and method of fabrication are disclosed.

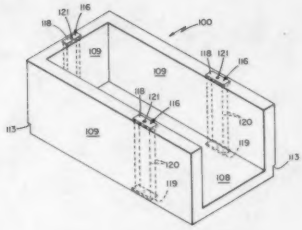
3,742,659
APPARATUS FOR MOUNTING EQUIPMENT ON A ROOF
Hilton H. Drew, 559 S. Ridge St., Mesa, Ariz.
Filed June 14, 1971, Ser. No. 152,853
Int. Cl. E04b *7/18;* **E04d** *13/03*
U.S. Cl. 52—19 **6 Claims**

Apparatus for Mounting Equipment on A Roof includes cooperating compartmented members which pivot on each other to provide a level platform and compartmented housing



which mates with the cooperating members and continues the compartments.

3,742,660
BUILDING CONSTRUCTION
Robert A. Bierweiler, 206 Broad Meadow Road, Needham, Mass.
Filed Apr. 3, 1972, Ser. No. 240,434
Int. Cl. E04h *1/04*
U.S. Cl. 52—79 **3 Claims**

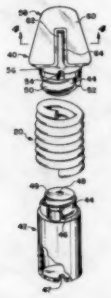


A method of building construction utilizing novel precast, prefabricated concrete components having innovations in component arrangement, tolerance control and connection design which reduce field labor and engineering thereby increasing construction efficiency.

3,742,661
PLUG CONSTRUCTION FOR A CONCRETE ANCHOR INSERT
Dennis W. Tye, Fremont, Calif., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.
Filed Feb. 9, 1972, Ser. No. 224,901
Int. Cl. E04c *5/12;* **E04g** *21/12*
U.S. Cl. 52—98 **5 Claims**

A pair of plastic plugs adapted to be threaded into the opposite ends of the helical coil of a conventional concrete anchor insert in order to prevent seepage of concrete into the coil during a concrete pouring operation around the insert and also to provide for visual location of the anchor insert after the concrete has set. The plug for the exposed or upper end of the coil of the anchor insert embodies an upstanding, flexible, locating prong which, in the free state of the plug, is straddled by a pair of torque-applying wings, the latter being for use in threading the plug into the exposed end of the coil and

adapted to break away from the locating prong at such time as the plug is threaded or turned to its home position in the coil

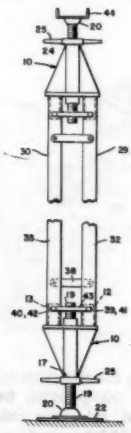


thus leaving the prong exposed on the upper surface of the hardened concrete for anchor insert locating purposes.

3,742,662
SHORING FRAME SYSTEM

Clayton R. Ballou, San Ramon, Calif., assignor to Hursh, Jack E., Millbrae, Calif., a part interest

Filed Aug. 5, 1971, Ser. No. 169,173
Int. Cl. E04g 25/00
U.S. Cl. 52—122 5 Claims



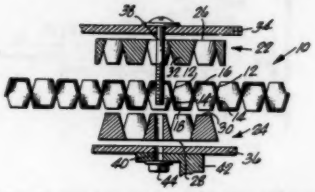
A shoring frame system is disclosed whereby a pair of generally planar columns are spaced from each other in tandem with the respective legs of each column interconnected by jack heads at the tops and bottoms thereof. Each jack head includes a jack thereon whereby the overall height of the respective legs of each column can be readily adjusted by adjusting a single jack.

3,742,663
PANEL BLOCKING

Fred E. Duskin, Garden Grove, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of Ser. No. 869,123, Oct. 24, 1969, abandoned.
This application Aug. 2, 1971, Ser. No. 168,490
Int. Cl. E04b 1/82; E04c 2/32
U.S. Cl. 52—145 5 Claims

A molded filler material filling the voids between the nodes of dimples in a sheet of inner core double dimpled material having face sheets attached to the nodes of the dimples to form a high strength lightweight panel. This filler material forms pads having a plane surface abutting the undersurface of the face sheets and a contoured configuration abutting the core surfaces to provide a solid sandwich filler reinforcement between the face sheets at selected positions. These blocking

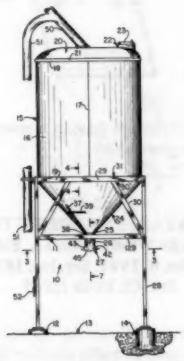


material pads provide the desired strength and ridigity at points of attachment of the completed panel to other structure. Strips of stiffening material also may be placed throughout the interior of the panel as a means of reducing the vibration or changing vibration characteristics of the panel.

3,742,664
OVERHEAD STORAGE BIN

Gerald J. Reding, Box 1235, Levelland, Tex.

Filed Mar. 30, 1972, Ser. No. 239,695
Int. Cl. E04h 7/22; B67d 5/06
U.S. Cl. 52—194 5 Claims



A cylindrical overhead storage bin made of fiberglass which includes a lower conical section that is supported by a saddle arranged at the upper extremity of a superstructure. The saddle distributes the load of the storage bin into the superstructure in a manner that enables the wall thickness of the bin to be held to a minimum value.

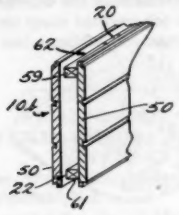
3,742,665
MODULAR BUILDING CONSTRUCTION

David A. Henry, 707 49th St., Court West, Bradenton, Fla., and Myron J. Larimer, 111 N. 4th St., Sturgis, Mich.

Filed May 24, 1971, Ser. No. 146,415
Int. Cl. E04b 2/42
U.S. Cl. 52—284 7 Claims

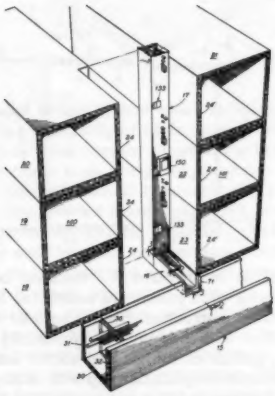
Building walls are constructed by erecting conventional studs and then lowering prefabricated wall sections over the studs. The prefabricated wall sections are constructed of any of a variety of materials and are provided with spaced apart passages therethrough to receive the studs. A preferred wall section is rectangular in shape and may be disposed horizontally or vertically, the smaller dimension being equal to the distance between two studs and each long edge being provided

with a vertical groove for sliding engagement with a stud. Alternatively the smaller dimension may be, for example, one-



third the distance between two studs, in which case three wall sections may be disposed between the studs.

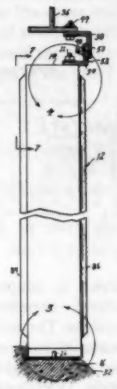
3,742,666
UNITIZED UTILITY DISTRIBUTION SYSTEM
Anthony A. Antoniou, Oak Brook, Ill., assignor to Anvan M/E Systems Inc., Glen Elly, Ill.
Filed Sept. 7, 1971, Ser. No. 178,276
Int. Cl. E04b 5/48; E02d 27/46
U.S. Cl. 52—221 **7 Claims**



A system for distributing energy and utility services from supply sources to consumption outlets, in buildings, particularly buildings of modular construction, wherein the distribution system is made up of prefabricated units, namely, a unitary main supply tunnel having main supply carriers mounted therein for connection with remote supply sources and to distribution carriers mounted in one or more distribution pan units; the supply carriers of the pan units being joined to the lower ends of vertically extending or upright supply stack units adapted to extend upwardly through spaces provided therefor in the building; each stack unit having outlets at selected levels for connection with utility wall units associated with utility consumption outlets.

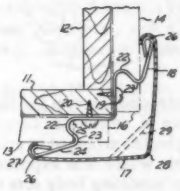
3,742,667
ARCHITECTURAL PANEL SYSTEM
Arthur M. Tofani, jr., 1801 Pine St., Philadelphia, Pa.
Filed Aug. 9, 1971, Ser. No. 170,092
Int. Cl. E04b 2/88
U.S. Cl. 52—235 **2 Claims**

An architectural panel system comprising a plurality of rectangular panels which position in side by side juxtaposed relation for enclosure purposes. Each panel is fabricated of relatively lightweight construction materials and is provided at its bottom edge with a plurality of spaced slots which are elongated in a direction parallel to the front and rear faces of the panel to permit limited longitudinal adjustment of each panel with respect to its bottom fastening at time of installation. The top end of each panel is provided with a plurality of spaced, threaded bolts which respectively position in a plurality of spaced receiving slots which are provided in the upper panel



framing members for panel securing purposes. The receiving slots are transversely disposed with relation to the bottom panel slots and open rearwardly to receive the spaced bolts therein as each panel is pivoted to vertical position. The upper panel framing members secure to the building construction in bolted connections having longitudinal slots to thereby permit limited longitudinal adjustment of each framing member.

3,742,668
CORNER CLOSURE ASSEMBLY
Joseph R. Oliver, East Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed May 19, 1971, Ser. No. 144,966
Int. Cl. E04f 19/02
U.S. Cl. 52—288 **3 Claims**

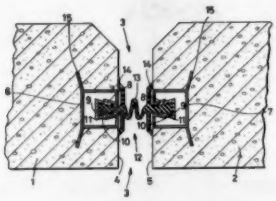


A closure assembly for concealing the ragged edges remaining when siding is applied to a structure is described. A plurality of resilient clips are spaced along the corner after the siding has been applied. The clips are configured to span the corner and to resiliently grasp a corner closure piece which the clips support. The decorative corner closure is configured and dimensioned so that it is firmly retained by the clips and resiliently and snugly held against the siding. The ragged edges of the siding are thus concealed and a decorative appearance realized. However, whenever desired the corner closure can be easily removed or replaced without disturbing the siding or the supporting clips.

3,742,669
ELASTIC GAP SEALING DEVICE

Hans Mansfeld, Heiligenhaus, Germany, assignor to Migua Mitteldeutsche Gummiund Asbestgesellschaft Hammerschmidt & Co., Heiligenhaus, Germany

Filed Mar. 10, 1972, Ser. No. 233,557
Claims priority, application Germany, Mar. 10, 1971, P 21 11 324.6
Int. Cl. E04b *1/68*; E04f *15/14*
U.S. Cl. 52—396 4 Claims

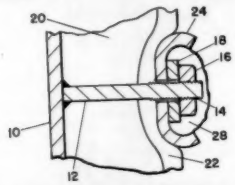


The present sealing device is adapted for sealing gaps between adjacent structural members especially prefabricated concrete components. The present device includes a sealing strip of elastic material such as rubber having two lateral strips interconnected by a bridging strip with longitudinal folds in the bridging strip. The lateral strips have a wedge shape with the narrower portion of the wedge adjacent to the bridging strip and with the wider portion of the wedge remote from the bridging strip. The wedge shaped lateral strips are pressed into a U-shaped rail of rigid material such as steel, whereby inwardly inclined legs of the rail tightly grip the wedge shaped contour of the respective lateral strip.

3,742,670
PROTECTOR FOR HIGH TEMPERATURE FURNACE INSULATION SUPPORTS

Carlisle O. Byrd, Jr., Houston, Tex., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,939
Int. Cl. F23m *5/00*; E04b *1/62*
U.S. Cl. 52—506 11 Claims



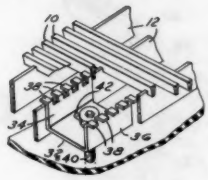
An insulating construction system for high temperature applications comprising a structural supporting member in refractory insulating bodies arranged to protect the supporting member at the points where it is exposed to high temperatures. The refractory insulating body acts to increase the useful life of the supporting member and allows greater latitude in the choice of materials for the member, resulting in greater ease of construction and increased efficiency of operation during the use of the member in high temperature applications.

3,742,671
HOLDDOWN FASTENING CLIP WITH GRATING AND SUB-SUPPORT STRUCTURES

William L. Ellis, 2876 Peace Drive, Rocky River, Ohio

Filed Nov. 9, 1971, Ser. No. 197,004
Int. Cl. E04c *2/42*
U.S. Cl. 52—507 7 Claims

A U-shaped fastener clip for fastening down barred gratings such as the parallel barred gratings frequently used for entranceways and elevator floors. The fastener clip is located below the upper level of the bars between two supporting joists of the floor gratings to which the bars are integrally connected. Slotted extensions on each end of the clip fit between the bars

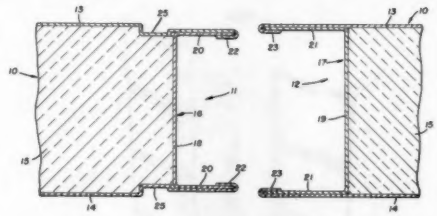


and engage the joists. The bottom part of the clip includes fastening means which engage a supporting sub-structure. In position, the clip lies entirely below the surface of the grating thus providing a blind or substantially concealed fastening.

3,742,672
MODULAR BUILDING PANEL HAVING INTERLOCKING EDGE STRUCTURE

Herman J. Schaeufele, Columbus, Ohio, assignor to United McGill Corporation, Columbus, Ohio

Filed Dec. 30, 1971, Ser. No. 213,915
Int. Cl. E04c *1/14*
U.S. Cl. 52—594 6 Claims

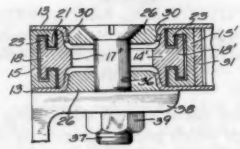


A building panel is provided for modular construction where a plurality of such panels are assembled in edgewise relationship to form a structural barrier such as a wall. The panels are formed with opposed, longitudinally extending marginal edge portions of tongue and socket configuration that interfit in interlocking relationship with mating marginal edge portions of adjacently disposed panels. The tongue configured edge portion is provided with an outwardly opening, longitudinally extending groove spaced a distance inwardly from the edge and the socket-forming edge portion is provided with an inwardly directed bead that cooperatively interengages with the groove to interlock two adjacently disposed panels in assembled relationship.

3,742,673
PANEL EDGE FASTENING MEANS

Paul Jennings, Corona Del Mar, and Delmar S. Miller, Newport Beach, both of Calif., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Mar. 22, 1971, Ser. No. 126,662
Int. Cl. E04c *2/36*
U.S. Cl. 52—624 6 Claims



A number of panel edge fasteners for lightweight sandwich panels are adjustably mounted along a channel member and

the member is inserted into and closes out the open panel edge. A pair of holes in the overlying panel skins is aligned with each selectively positioned fastener, and a pair of plugs pressed into recesses in the fastener clamps the panel skins therebetween. Void space between the lightweight panel core and the channel and attached fasteners may be filled with a foam adhesive.

3,742,674

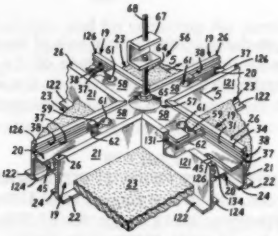
SUSPENDED CEILING SYSTEM INCLUDING A GRID NETWORK

Marshall Ira Lang, Wayne, N.J., assignor to Bajer Industries Incorporated, Fairfield, N.J.

Continuation-in-part of Ser. No. 73,806, Sept. 21, 1970, Pat. No. 3,685,235. This application Mar. 1, 1972, Ser. No. 230,824

Int. Cl. E04b *5/55*

U.S. Cl. 52—666 **7 Claims**



A suspended ceiling system which includes a grid network for supporting a plurality of ceiling panels with this network being made up of a plurality of generally like grid modules. Each grid module is an elongated integrator member in the form of an inverted channel of suitable stiff material, such as aluminum. This inverted channel is defined by a cross web and a pair of transversely spaced, depending sidewall flanges that are integral with the web and between which supplemental equipment, such as selected utility units, may be mounted at any chosen location by anchoring means, such as screws, snap-in fasteners, interfitting parts or anchoring elements, e.g., bolts, extending through the web. The bottom edge of at least one of these channel sidewall flanges carries an integral, outwardly extending, panel-supporting flange, and both thereof may be so equipped when demanded. A pair of elongated, transversely spaced, upstanding and opposed flanges are permanently connected, such as by being made integral with the web at the junctions thereof with the depending sidewall flanges. Each of these upstanding flanges is provided on the inner side thereof with two upwardly spaced and laterally extending track flanges with these substantially aligned transversely to form two opposed pairs thereof. The inner opposed edges of each of these pair of track flanges are spaced apart to provide an intervening longitudinal access slot. The space defined by the lower pair of these track flanges and the web constitutes a first longitudinal, equipment-receiving track with both pairs defining therebetween a second upper, longitudinal, equipment-receiving track. The inner faces of the depending channel sidewall flanges are provided with transversely spaced and generally aligned, opposed abutment flanges with a wide intervening access slot defined therebetween. The resulting grid module has the general appearance of an H-shaped channel having the side flanges on opposite sides of the cross web equipped with a plurality of pairs of lateral flanges.

A trim strip is provided removably to cover, where desired, the lower space of such inverted channel defined between the cross web, the sidewall flanges and the abutment flanges. A snap-in flow-diverting air supply insert is also provided for this space which is anchored to the cross web and one of these abutment flanges; and tempering air delivery is effected by an inverted, U-shaped, overhead duct section which has flexible bottom lip flanges snapped beneath a pair of the opposed track flanges with openings in the cross web allowing flow downward into this lower space. Such openings may be in the form of a longitudinal series of localized, longitudinally spaced and generally aligned, elongated slots which may also serve selectively to receive therethrough anchor members, such as bolts or screws. A partition post cap structure is also provided for seating against the abutment flanges and anchored through such lower space by a suitable hanger member, such as a screw, depending from the cross web, or other suitable means such as a spring-biased member which pushes up against the post cap structure to hold the post and cap structure assembly in free standing position of the post.

3,742,675

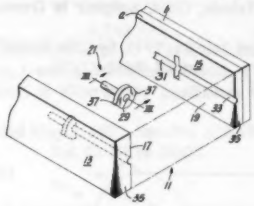
CONCEALED ANCHORING MEANS IN LAMINATED BEAMS

Harlan J. Demers, c/o Koppers Company, Inc., Koppers Bldg., Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,668

Int. Cl. E04c *3/12*

U.S. Cl. 52—721 **5 Claims**



A laminated beam composed of at least two laminated elongate members has a concealed anchoring means embedded in the beam between the mating surfaces of the elongate members whereupon the laminated beam may be concealably fixed to another structure. The anchoring means comprises a nut having a tube fixed to one face thereof with the longitudinal axis of the tube being in axial alignment with the aperture of the nut. At least one of the mating surfaces has a first recess conforming to the anchoring means and a second axial recess in axial alignment with the aperture of the nut extending from the nut to the exterior of the beam to receive a bolt extending from the other structure.

3,742,676

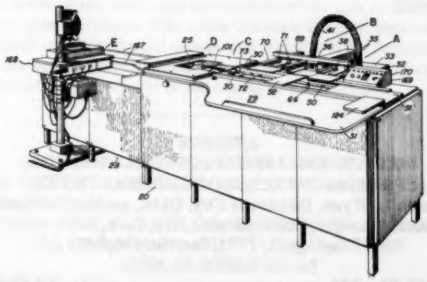
PACKAGING APPARATUS AND METHOD

Burmah D. Lawing, Charlotte, and Carol Dean Rankin, Lowell, both of N.C., assignors to Speizman Industries, Inc., Charlotte, N.C.

Filed Apr. 30, 1971, Ser. No. 139,165

Int. Cl. B65b *63/04*

U.S. Cl. 53—21 FW **30 Claims**



An apparatus and method for packaging hosiery in an automatic operation that sequentially folds the hosiery about an in-

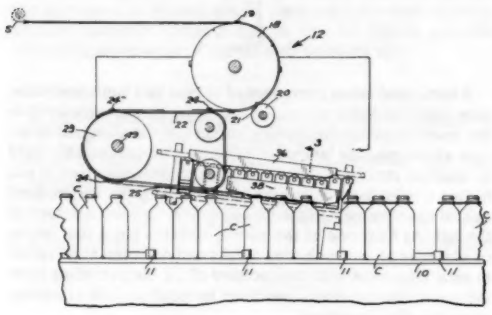
sert board, places the folded hosiery on an L-board, bags the L-board mounted hosiery, and seals the bags, with the hosiery advancing in a continuous lengthwise direction to and through the various operating stations. Hosiery is initially laid out lengthwise at a folding station at which the hosiery is partially folded automatically, with folding being completed as the hosiery advances lengthwise to a preliminary packaging station at which the folded hosiery advances onto an L-board and against the upstanding end flap thereof. The L-board mounted hosiery is advanced to a bagging station at which it is inserted lengthwise into a bag that is gripped to hold it stationary during hosiery insertion and is then ungripped to allow the bagged hosiery to advance to a bag closing station at which it advances against a stop that causes the hosiery to fully seat in the bag and positions the bag properly for sealing. After the bag is sealed it is turned over lengthwise by oscillation of a turning plate on which the bagged hosiery is received at the bag closing station, from which the bagged hosiery is removed after turning.

3,742,677

METHOD AND APPARATUS FOR APPLYING A CARRIER TO A CLUSTER OF CONTAINERS

John F. Best, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 21, 1971, Ser. No. 164,671
Int. Cl. B65b *35/36*
U.S. Cl. 53—26 **10 Claims**



A method and apparatus for applying a carrier of elastic material onto a cluster of containers which comprises gripping the carrier adjacent the periphery thereof and stretching the carrier in the direction of the plane thereof. As the containers are moved along their path, the edges of the carrier are forced downwardly and simultaneously a central force is applied to the carrier while the carrier is stretched to force the carrier over the ends of the containers after which the carrier is released.

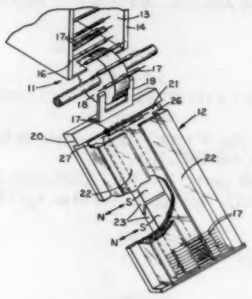
3,742,678

METHOD AND APPARATUS FOR CONVEYING PARAMAGNETIC, ELONGATED ARTICLES

Kenneth L. Wyatt, Oklahoma City, Okla., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,268
Int. Cl. B65b *5/08, 19/34*
U.S. Cl. 53—236 **2 Claims**

A paramagnetic, elongated article is introduced into an inclined nonparamagnetic magazine and is gravitationally carried down a surface thereof. One or more longitudinally aligned bar magnets, having a pole spacing which is less than the longitudinal length of the article, are positioned beneath the magazine to generate parallel lines of magnetic flux



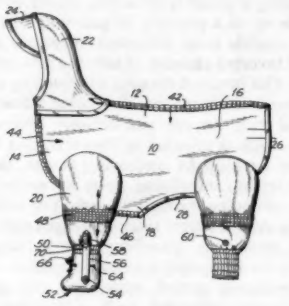
therethrough, so that the longitudinal axis of the article being gravitationally carried down the surface of the magazine is maintained parallel to the lines of magnetic flux and centered with respect to the longitudinal axes of the magnets.

3,742,679

STRETCHABLE PET SUIT WITH BOOTS

Constance Jordan, 110-20 71st Road, Forest Hills, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,070
Int. Cl. A01k *13/00;* **B68c** *05/00*
U.S. Cl. 54—79 **7 Claims**



A pet suit is provided with elasticized strips along the back and along the breast and underneath sections and encircling the legs. On the legs are provided snap fasteners to which are attached elastic straps which are connected to boots to hold the latter on the legs. Laces encircle the boots to tie the same on the legs of an animal.

3,742,680

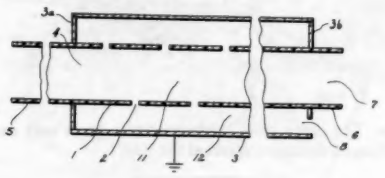
APPARATUS FOR SEPARATING PARTICULATE MATTER FROM A GASEOUS SUSPENSION

Richard K. Severs, Houston, Tex., assignor to Scientific & Educational Services, Inc., Houston, Tex.

Continuation of Ser. No. 729,775, May 16, 1968, abandoned.
This application Apr. 19, 1971, Ser. No. 135,365
Int. Cl. B03c *3/30*
U.S. Cl. 55—103 **9 Claims**

Apparatus is described for separating electrically charged solid or liquid particulate matter from a gas stream in which such particulate matter is suspended, including an electrically insulated flue through which the suspension is passed, a perforate wall in this flue and a collecting electrode located outside the flue opposite and spaced from the perforate wall. Such arrangement provides maximum field intensity at the point of perforation and accelerates the particulate matter

through the perforation to the collecting electrode where it is discharged. Means are also described for charging the particulate matter by turbulent flow of the gaseous suspension; for controlling the flow of gas through the perforate wall by adjusting the size of the perforations and the pressure differential across the perforate wall; for containing the separated and discharged particles by enclosing the perforate wall and the



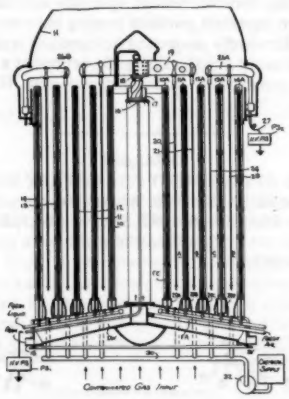
collecting electrode; and for removing the particles from this enclosure. Such apparatus can be used to effect essentially complete separation of the gaseous and particulate components of a suspension, to concentrate particulate matter in a portion of the gas stream in which it is suspended or to transfer particulate matter suspended in a gas stream to a second gas stream.

3,742,681

LIQUID DISTRIBUTORS FOR WET ELECTROSTATIC PRECIPITATORS

Alexander P. deSeversky, New York, N.Y., assignor to Seversky Electronatom Corporation, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,886
Int. Cl. B03c 3/78
U.S. Cl. 55—119 **7 Claims**



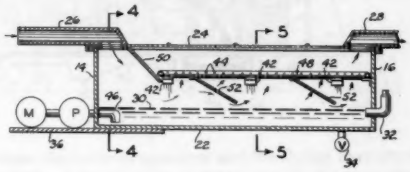
A wet electrostatic precipitator including at least one annular gas passage defined by concentrically-arranged collector tubes having liquid distributors mounted thereabove to produce downwardly-flowing liquid films on the walls of the passage. A discharge electrode structure is disposed in the annular passage, a high voltage being applied between the electrode structure and the liquid films on the collector walls to cause ionized particulates in a contaminated gaseous stream conveyed upwardly through the passage, to migrate toward the films to be carried downwardly thereby for disposal. The liquid distributors are adapted to produce downflowing uniform films of liquid on the surfaces of the collector tubes which line the passage, the films being free of dry spots or splashing.

3,742,682

OLAN SMOG DEVICE

Angelo Y. Ligutom, 808 N. Herbert Avenue, Los Angeles, Calif.

Filed Mar. 19, 1971, Ser. No. 126,011
Int. Cl. B01d 47/02
U.S. Cl. 55—223 **3 Claims**



A liquid containing baffle equipped scrubbing device for treatment of effluent gases is interposed in the exhaust pipe of an internal combustion engine. The scrubbing action is achieved by a pump circulating water through spray forming tubing intersecting the path of exhaust gas flow.

3,742,683

OXYGEN PRODUCING UNIT WITH COOLED CASING

Albert E. Sebest, Irwin, and Frank W. Smith, Pittsburgh, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 3, 1971, Ser. No. 139,671
Int. Cl. B01d 50/00
U.S. Cl. 55—261 **9 Claims**

An oxygen producing candle is surrounded by a metal shell, which in turn is enclosed in a metal casing spaced from the shell. The unit is provided with an oxygen passage connecting the inside of the shell with the outside of the unit for delivery of oxygen therefrom. The space between the shell and casing is filled with a hydrated compound which will be dissociated by the heat from the burning candle and give off water vapor to limit the temperature of the casing to a safe level.

3,742,684

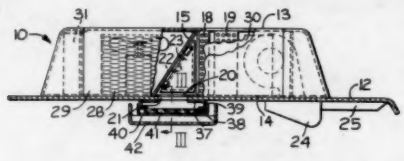
AIR FILTER MOUNTING ASSEMBLY

John D. Walt, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 9,583, Feb. 9, 1970, Pat. No. 3,670,808.
This application Aug. 25, 1971, Ser. No. 175,000
Int. Cl. B01d 27/08
U.S. Cl. 55—385 **3 Claims**

A combined heating and air-conditioning system is provided with a heater coil and evaporator coil located back to back in

a single housing enabling the use of common controls and common duct system for both heating and cooling. The heater coil is placed ahead of the evaporator coil in the air flow so



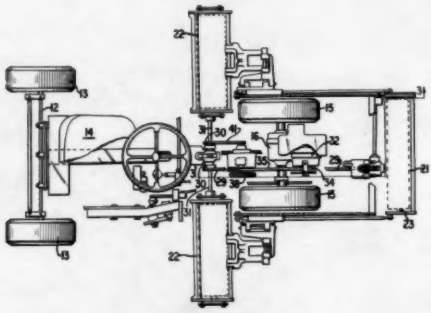
that air may be heated and dehumidified on cool, humid days and warm air from the heater may be used to prevent the evaporator coil from frosting over.

3,742,685

LAWN MOWER WITH HYDROSTATIC DRIVE

John R. Lian, Stratford, and Simo A. O. Pennila, Milford, both of Conn., assignors to Stellar Industries, Inc., Bridgeport, Conn.

Filed Dec. 29, 1971, Ser. No. 213,389
Int. Cl. A01d *75/30*
U.S. Cl. 56—7 **8 Claims**



A gang lawn mower includes a plurality of reel-type lawn mowers attached to a tractor and a prime mover is mounted in the tractor. One hydrostatic transmission drivingly connects the output of the prime mover to the ground wheels of the tractor to drive the tractor and a second hydrostatic transmission drivingly connects the output of the prime mover to the lawn mower reels. The lawn mower reels are thus driven independently of the speed of the tractor.

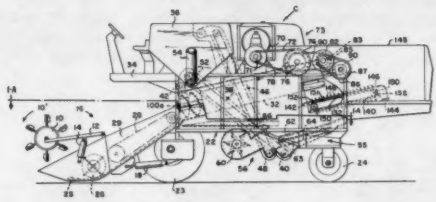
3,742,686

AXIAL FLOW COMBINE HARVESTER

Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation of Ser. No. 790,145, Jan. 9, 1969, abandoned.
This application May 10, 1972, Ser. No. 252,120
Int. Cl. A01d *45/02*
U.S. Cl. 56—12.9 **21 Claims**

A combine harvester having two axial flow threshing and separating units in side-by-side relation with feed augers in front for receiving crops from a crop header and infeed conveyor and for drawing crops axially into the units. The threshing and separating units pass grain through concaves and grates onto a grain pan and grain cleaning means and, at the rear, deliver straw onto a straw conveyor for rearward



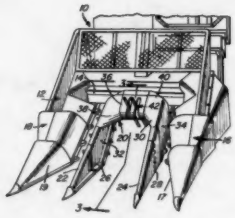
discharge. The clean grain is elevated to a grain tank on top and discharged through a spout at the side.

3,742,687

PICKUP ATTACHMENT FOR CORN HARVESTERS

Lester Kalkwarf, R.F.D. No. 2, Aurora, Nebr.

Filed Apr. 28, 1972, Ser. No. 248,449
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 **5 Claims**



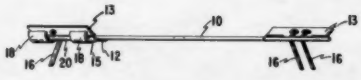
A rotary tine construction for upwardly and rearwardly displacing down cornstalk portions passing between the forward ends of the forwardly projecting horizontally transversely adjustable split snout arms or side wall portions of a multiple row corn head constructed in accordance with U.S. Pat. No. 3,585,790.

3,742,688

RAKE ATTACHMENT FOR ROTARY MOWER

Henry B. Tonjes, Jr., Box 188, Wisner, Nebr.

Filed Nov. 6, 1972, Ser. No. 304,120
Int. Cl. A01d *43/02*
U.S. Cl. 56—193 **8 Claims**



A rotating power rake for use with a rotary mower including hinged tooth carriers adapted to be held in an operative position by aerodymanic forces.

3,742,689

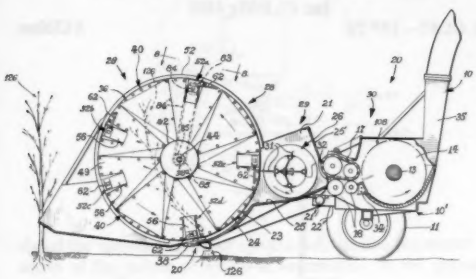
ROWLESS CROP HARVESTER

Arthur G. Barows, Downers Grove, and Edward W. Parrish, Clarendon Hills, both of , Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 18, 1971, Ser. No. 199,949
Int. Cl. A01d *57/02*
U.S. Cl. 56—226 **19 Claims**

A non-row sensitive harvester adaptable for use on row and broadcast planted crops, the apparatus having a rotatable reel

auger in one embodiment and a disk reel in another embodiment comprising a plurality of disk-like crop-penetrating gathering heads movable in a cyclic path relative to the ground, each of the heads having mounted thereon gathering



elements which grasp and sweep the crops over a cutter, rotation of the reel and the actuation of the gathering elements being selectively adjustable to affect the operating characteristics of the harvester so that it is adaptable to a plurality of crops and situations.

3,742,690

GROUND-ENGAGING STRUCTURE FOR THE FRONT CUTTING END OF A HARVESTER

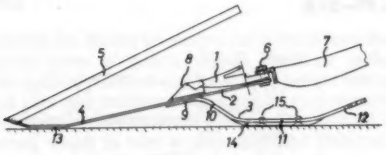
Gustav Schumacher, II, and Gunter Schumacher, both of Haus Nr. 51, 5231 Eichelhardt, Germany

Filed Mar. 1, 1972, Ser. No. 230,731

Claims priority, application Germany, Mar. 8, 1971, P 21 10 973.9; Aug. 23, 1971, P 21 42 153.4

Int. Cl. A01d *65/02*

U.S. Cl. 56—313 21 Claims



A ground-engaging structure to be situated at the front cutting region of a harvester. The structure has a forwardly and downwardly extending elongated support which at its rear upper end is fixed to the harvester at the cutting region thereof. A rearwardly and downwardly extending elongated support is fixed to the forwardly extending support intermediate the ends thereof and this rearwardly extending support carries at ground level a structure for slidably engaging the ground.

3,742,691

HARVESTING MACHINE

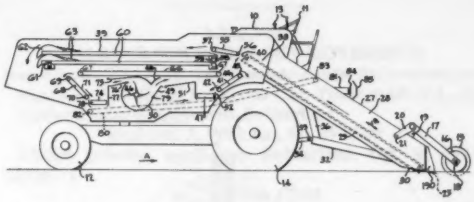
Wilbur H. Graybill, R. D. No. 2, Lititz, Pa.

Division of Ser. No. 848,993, Aug. 11, 1969, Pat. No. 3,628,609. This application Sept. 1, 1971, Ser. No. 176,864

Int. Cl. A01d *55/02*

U.S. Cl. 56—259 5 Claims

A tomato harvesting machine for severing tomato bearing stalks with reciprocating cutter bars, elevating the stalks and tomatoes with an inclined conveyor, and separating the tomatoes and the stalks with shaker bars, inclined cleaning belts, and a debris-removing fan. A first of the cleaning belts is positioned between the conveyor and the shaker bears to receive tomatoes previously separated from the stalks and reject soil early in the harvesting process. The second of the cleaning belts is located at an end of the shaker bars remote from the inclined conveyor to receive tomatoes subsequently separated from the stalks by the shaker bars. A transfer belt bridges the



gap between the inclined conveyor and the shaker bars above the first cleaning belt to prevent entanglement of any vegetation in the shaker bar mechanism.

3,742,692

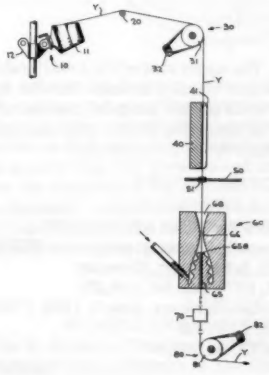
APPARATUS AND METHOD FOR FALSE TWISTING YARN

William M. Bense, Barrington, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed June 1, 1971, Ser. No. 148,326

Int. Cl. D02g *1/16*

U.S. Cl. 57—34 HS 11 Claims



Disclosed is an apparatus and method for false twisting a monofilament or multifilament yarn. False twisting means are provided to impart twist to the yarn and the twisting means employs a fluid medium both to twist the yarn and control the tension of the yarn being twisted. Additionally, there may be separate means provided to supplement or more accurately control the twist being imparted to the yarn.

3,742,693

YARN-TWISTING APPARATUS FOR FORMATION OF MULTIPLE-PLY THREAD

Aloys Greive, Munster/Westf., and Aloys Treus, Havixbeck/Westf., both of Germany, assignors to Hamel GmbH, Munster/Westf., Germany

Filed Oct. 12, 1971, Ser. No. 188,335

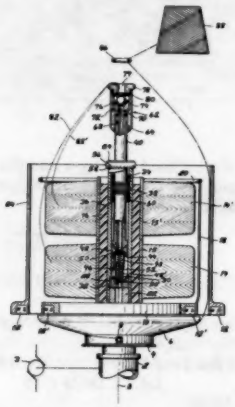
Claims priority, application Germany, Oct. 14, 1970, P 20 50 490.9

Int. Cl. D01h *1/10, 7/86*

U.S. Cl. 57—58.86 1 Claim

A yarn-twisting apparatus for formation of multiple-ply thread has a nonrotatable spindle carrying at least one spool from which two strands are drawn. The strands or threads pass down through the hollow interior of the spindle and out a radial opening in a rotating storage disk, thence up around the spool or spools to a bobbin. A first brake comprising a ball

received in a conical or funnel-shaped seat is provided in the top or inlet end of the spindle and a second brake in the form of a compressible body with semispherical ends received between two conical seats is provided in the lower or yarn-outlet region of the spindle. The upper seat of the lower brake is formed on the end of a hollow element threaded into the spindle and provided with a scale so that the axial position of its seat can be read off and set according to how much tension is to be imparted to the threads by the second brake.



3,742,694

SPINNING AND TWISTING APPARATUS

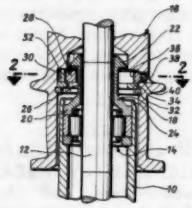
Helmut Speiser, Grossheppach, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 2, 1971, Ser. No. 149,291

Claims priority, application Germany, June 3, 1970, P 70 20 663.2; May 10, 1971, P 21 22 963.0

Int. Cl. D01h *7/14*

U.S. Cl. 57—132 **14 Claims**



Apparatus for spinning and twisting yarn comprising a whorl mounted on a spindle. The spindle is rotatably journalled in a bearing housing. A coupling is provided connecting the whorl to the bearing housing. The coupling having interlocking means one portion of which is concentric abutment member, the other portion of which is a radially slideable latch.

3,742,695

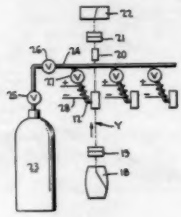
THERMOPLASTIC YARN PLASTICIZING DEVICE AND METHOD OF PLASTICIZING THERMOPLASTIC YARN

Robert F. Conrad, 5341 Falmouth Road, Washington, D.C.

Division of Ser. No. 656,223, July 26, 1967, abandoned. This application June 25, 1969, Ser. No. 862,097

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS **3 Claims**



A yarn heater constructed so that when used with a false twist device, a coaction between heater and spindle is created when plasticizing fluid is caused to spin within the heater in the direction in which the false twist device is inserting twist in the yarn.

3,742,696

YARN SPINNING APPARATUS

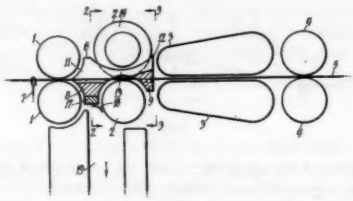
Bernard Milton Hedaway, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Feb. 9, 1971, Ser. No. 114,015

Claims priority, application Australia, Feb. 9, 1970, PA0285/70

Int. Cl. D01h *5/28*

U.S. Cl. 57—51.6 **6 Claims**



A self-twist spinning machine comprising a drafting mechanism and an oscillating roller twisting mechanism, positioned in front of the drafting mechanism, wherein there is provided, in the region between the twisting rollers and the drafting mechanism, a plurality of vanes which are laterally spaced from one another and which extend in the direction of travel of the strands and serve to define separate paths for the strands through the said region.

3,742,697

DRIVING ARRANGEMENT FOR AN ELECTRIC WATCH

Tetsuro Hama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,500

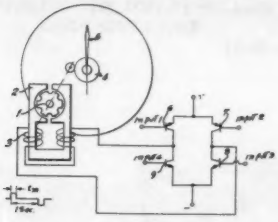
Claims priority, application Japan, July 27, 1970, 45/65033

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 A **4 Claims**

An electric watch including an electro-mechanical converter driven by a signal produced by dividing a series of divider means, a relatively high frequency oscillating time stan-

dard signal. The output of the last of said divider means is combined in a wave shaping logic circuit with the output of an intermediate stage of said divider means for producing a pulse



signal for application to an electro-mechanical converter, the width of the pulses of which is determined by the period of said intermediate stage output.

3,742,698

CIRCUIT FOR QUARTZ CRYSTAL TIMEPIECE

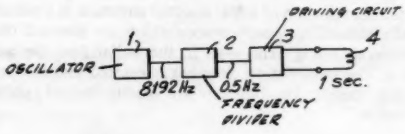
Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 6, 1971, Ser. No. 160,021

Claims priority, application Japan, July 6, 1970, 45/58528

Int. Cl. G04c *3/00*; H03k *21/00*; H02k *33/16*

U.S. Cl. 58—23 A **3 Claims**



A device for driving an electro-mechanical transducer of a timepiece from a quartz crystal oscillator including a switching circuit formed with an active element having an insulated gate type transistor and a bipolar type transistor. The electro-mechanical transducer is driven from said bipolar type transistor, which in turn is controlled and switched by the saturation current flowing through said insulated gate type transistor.

3,742,699

SOLID STATE WATCH DISPLAY SWITCH

John M. Bergey, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 138,557, April 29, 1971. This application Jan. 14, 1972, Ser. No. 217,765

Int. Cl. G04b *19/30*; B04c *3/00*

U.S. Cl. 58—50 R **13 Claims**

Disclosed is a solid state wristwatch with an electro-optical digital display of light-emitting diodes. Incorporated in the watch is a switch for actuating the display in response to a predetermined movement of the wearer's arm so that movement of the other hand or arm is not required and the other hand is left free for carrying packages or other uses.

3,742,700

BALANCE FOR HOROLOGY MOVEMENTS

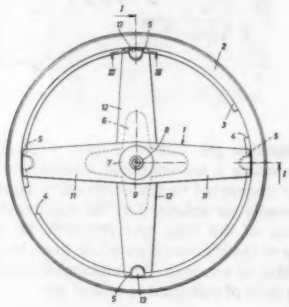
Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'horlogerie Chs. Tissot et fils S.A., La Locle (Canton of Neuchatel), Switzerland

Filed Oct. 3, 1972, Ser. No. 294,509

Claims priority, application Switzerland, Oct. 8, 1971, 14738/71

Int. Cl. G04b *17/00*

U.S. Cl. 58—107 **8 Claims**



A balance for horology movements including an annular rim and a central part. The central part has a plurality of radially extending, elastically deformable arms which have catches at their ends that lock into corresponding housings in the annular rim. The housings and catches are set so as to insure the centering of the rim with respect to the central part. In alternative embodiments there may be three or four elastically deformable arms and/or the arms may have the housings with the rim having the catches.

3,742,701

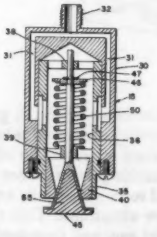
PROPELLANT INJECTOR ASSEMBLY

John R. Feemster, Saratoga, and Nils Langenborg, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1971, Ser. No. 153,723

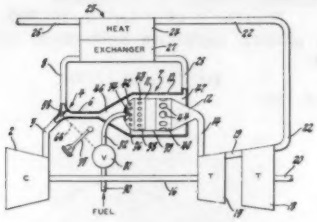
Int. Cl. F02k *9/02*

U.S. Cl. 60—258 **5 Claims**



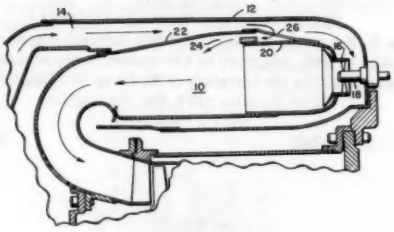
A liquid propellant injector adapted to be installed into a bipropellant thrust chamber, the injector forming an orifice closed by a spring biased valve, wherein the valve and valve seat surfaces form a frustoconical, annular opening upon opening of the valve. The liquid propellant pressure provides the opening force to overcome the valve spring bias, producing a uniform spraying pattern of the liquid propellant outwardly from the injector to combine with a solid propellant.

3,742,702
REGENERATIVE GAS TURBINE SYSTEM
Ronald E. Quinn, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 22, 1971, Ser. No. 108,893
Int. Cl. F02c 7/10
U.S. Cl. 60—39.23 **3 Claims**



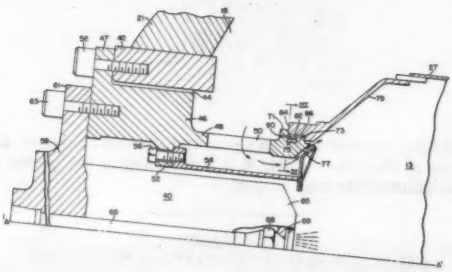
A regenerative gas turbine engine with combustion apparatus including a conventional combustion liner has the compressor connected to the combustion apparatus so as to supply primarily air unheated by the regenerator to the combustion zone of the liner and primarily air heated by the regenerator to the dilution zone of the liner, to reduce generation of oxides of nitrogen. An adjustable valve provides for varying the ratio of unheated to heated air.

3,742,703
VARIABLE GEOMETRY COMBUSTOR CONSTRUCTION
Jerry O. Melconian, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Oct. 26, 1971, Ser. No. 192,412
Int. Cl. F02c 3/00
U.S. Cl. 60—39.32 **2 Claims**



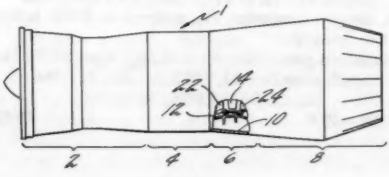
The combustion chamber for a gas turbine engine is constructed of a plurality of spaced telescoping sections, the gap between the sections providing an inlet for the introduction of cooling air. A flexible joint between the overlapping portions of the telescoped sections permits each section to expand and contract with low constraint. This results in a change in the size of the air inlet gap, and thus controls the amount of air introduced to the combustor under varying temperature conditions. The flexible joint comprises an annular ring with a plurality of flexible axially extending circumferentially spaced fingers. The ring is connected to one section, the fingers to the other, the space between the fingers permitting the flow of air to an air inlet gap in which a circumferentially disposed corrugated ring is mounted for providing a minimum spacing between the sections.

3,742,704
COMBUSTION CHAMBER SUPPORT STRUCTURE
Richard S. Adelizzi, Marlton, N.J., and James A. Laurelli, Springfield, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 13, 1971, Ser. No. 162,170
Int. Cl. F02c 7/20
U.S. Cl. 60—39.31 **5 Claims**



A support structure for the upstream portion of a combustion chamber. The combustion chamber includes a conically shaped collar portion having a circumferential groove on its inner diameter surface. A plurality of axial slots extend from the upstream surface of the collar to the groove. On the downstream portion of a fuel injector structure is a plurality of radially extending protuberances which are inserted through the corresponding axial slots in the collar into the annular groove. The combustion chamber is rotated and the housing and the combustion chamber are axially locked relative to each other.

3,742,705
THERMAL RESPONSE SHROUD FOR ROTATING BODY
Perry P. Sifford, Palm Beach Garden, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 28, 1970, Ser. No. 101,481
Int. Cl. F02g 1/00
U.S. Cl. 60—39.66 **5 Claims**



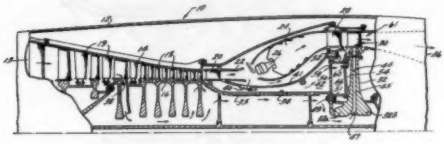
This invention shows a shroud construction located around the tips of the blades on a rotating body in an engine to provide a minimum clearance between the blade tips and the shroud during all conditions of operation-acceleration, steady state and deceleration. This shroud construction is connected to the end of two annular flanges which extend inwardly from an inner engine case towards the rotating member. The shroud member faces the blade tips and is arranged to have a flow of cooling fluid pass therethrough. Cooling vanes extend from the inner engine case into a duct through which fan air passes. Compressor air passes through the shroud construction.

3,742,706

DUAL FLOW COOLED TURBINE ARRANGEMENT FOR GAS TURBINE ENGINES

Nicholas Klompas, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 20, 1971, Ser. No. 209,694
Int. Cl. F02c 7/18; F01d 5/08, 5/32
U.S. Cl. 60—39.66 8 Claims



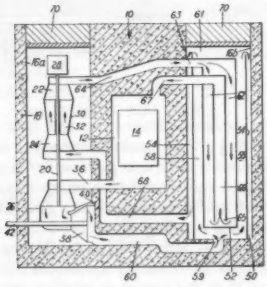
Turbine blading for a gas turbine engine includes a dual source of turbine cooling airflow wherein a portion of the high pressure compressor discharge airflow is directed to cool the most critical temperature areas of the turbine blade and a portion of the low pressure compressor interstage airflow is directed to cool the less critical temperature areas of the same turbine blade. The invention herein described was made in the course of or under a contract or subcontract thereunder (or grant) with the Department of the Navy.

3,742,707

GAS TURBINE ENGINES

Edward George David Andrews, near Rugby; Robert George Ward, Coventry; John Bertram Holliday, Derby, and James Norman Hurst, Repton, all of England, assignors to Rolls-Royce Limited, Derby, England

Filed Oct. 20, 1970, Ser. No. 82,395
Claims priority, application Great Britain, Oct. 25, 1969, 52,365/69
Int. Cl. G21d 1/02, 5/06
U.S. Cl. 60—59 T 6 Claims



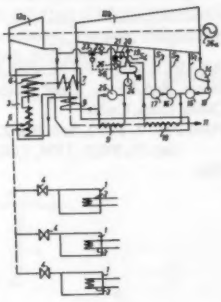
A closed cycle gas turbine power plant has a compressor, a nuclear reactor disposed in a pressure vessel and a turbine which is connected to receive and be driven by working fluid compressed by the compressor and heated by the nuclear reactor. A heat exchanger receives the working fluid expanded in the turbine and returns it to the compressor, the turbine and the compressor being removably disposed within a first recess in the pressure vessel and the heat exchanger being removably disposed in a second recess in the pressure vessel.

3,742,708

METHOD AND MEANS FOR IMPROVING THE OPERATION UNDER PARTIAL LOADS OF A STEAM GAS PLANT INCLUDING A GAS TURBINE AND A STEAM TURBINE WITH A STEAM GENERATOR AT THE DOWNSTREAM END

Jean Vidal, Ville D'Avray; Paul Henri Lugand, Cravanche; Jacques Lemoine, and Jean Parisot, both of Paris, all of France, assignors to Societe General De Constructions Electrique Et Mecaniques (Alsthom) and Stein Industrie, Paris, France

Filed May 14, 1970, Ser. No. 37,116
Claims priority, application France, May 14, 1969, 6914334
Int. Cl. F01k 7/44; F22d 5/00
U.S. Cl. 60—67 2 Claims



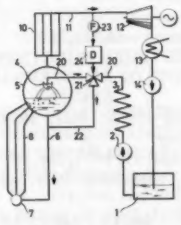
A steam gas plant comprising a gas turbine, a steam generator with burners fed by the exhaust gases of the gas turbine a steam turbine fed by the steam generator wherein steam is extracted at various points of the steam turbine to feed a deaerator receiving water from water heaters and returning the water to the steam generator, the extracted steam being fed into the deaerator through channels controlled by nonreturn valves and, in at least one of such channels a gate controlled by the pressure prevailing in the deaerator so as to maintain the pressure substantially constant.

3,742,709

STEAM POWER PLANT AND METHOD OF OPERATING THE SAME

Richard Dolezal, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Jan. 18, 1971, Ser. No. 107,275
Claims priority, application Switzerland, Jan. 19, 1970, 676/70
Int. Cl. F22g 5/00; F22d 1/12
U.S. Cl. 60—106 7 Claims



The feed water is normally supplied to the steam generator to extract heat from the steam generated in the evaporator. However, at peak loads of the plant, the rate of heat extraction from the steam is temporarily reduced so that the amount of steam produced is increased with a greater flow of steam to the prime mover.

3,742,710
TERMINATION FLUIDS FOR SOLID STOP-START PROPELLANT ROCKET MOTORS

John C. Trowbridge, Saratoga, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.

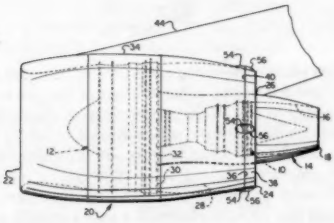
Filed Aug. 15, 1969, Ser. No. 850,618
Int. Cl. C06d *5/10*
U.S. Cl. 60—220 4 Claims

Thrust termination fluids for extinguishing a solid propellant rocket motor have dissolved therein a solid oxidizing agent which is deposited on the surface of the extinguished propellant to facilitate reignition of the motor. Suitable termination fluids include; water, alcohols, water-ammonia solutions and hydrazine-ammonia solutions and water-alcohol solutions. Suitable oxidizers to be dissolved in the fluids include nitrate and perchlorate oxidizing salts.

3,742,711
MODULATABLE THRUST NOZZLE APPARATUS

Richard H. Timms, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Feb. 7, 1972, Ser. No. 224,125
Int. Cl. F02k *3/04, 1/02*
U.S. Cl. 60—226 8 Claims



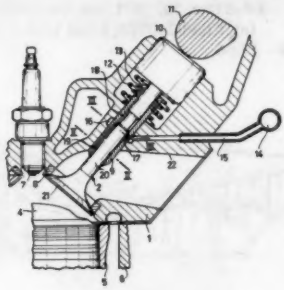
Fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate shroud surrounds fan and engine to define annular passage for fan air and terminates forward of exit end of exhaust nozzle. Aft portion of shroud is separate sleeve movable axially rearward to define peripheral gap for inflow of free stream air to add to mass delivered by fan. Engine cowl converges rearwardly from transverse plane of aft end of sleeve. When sleeve is stowed it defines with the cowl a convergent nozzle of minimum discharge area. When it is fully deployed, it forms with the cowl a divergent nozzle of maximum discharge area conformed to produce optimum thrust for takeoff.

3,742,712
DEVICE FOR THE TIMED INJECTION OF AIR INTO THE EXHAUST DUCTS OF AN INTERNAL COMBUSTION ENGINE

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Apr. 19, 1971, Ser. No. 135,025
Claims priority, application Italy, Apr. 22, 1970, 23651 A/70
Int. Cl. F02b *75/10*
U.S. Cl. 60—294 5 Claims

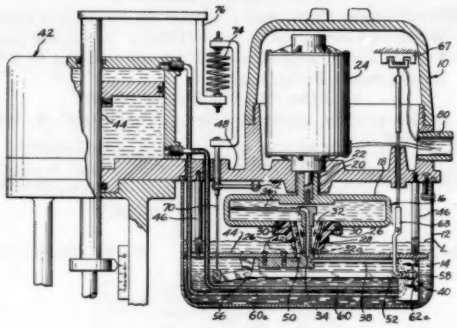
A device for injecting air so as to admix same with the exhaust gases of an internal combustion engine to reduce the emission of pollutants in the atmosphere. The injection is caused to take place in the immediate vicinity of the exhaust valve, and a kind of slide valve is obtained, by suitably shaping the valve stem and the valve guide, so as to inject the diluent air when the exhaust valve is open and to prevent such an injection when the exhaust valve is closed. By so doing, air is admixed with the exhaust gases in timed sequence and when the exhaust gases still retain their own sensible heat.



3,742,713
HYDRAULIC CONTROL ACTUATOR

Earl O. Schweitzer, 29353 Luxona Road, Wickliffe, Ohio

Filed Nov. 8, 1971, Ser. No. 196,625
Int. Cl. F15b *15/18*
U.S. Cl. 60—325 19 Claims

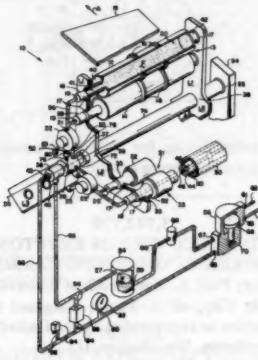


A hydraulic control actuator in the form of a compact mechanism having a long, maintenance-free service life. The actuator comprises a reservoir portion for retaining a supply of actuating liquid and a bowl-type pump disposed above said reservoir portion and rotatable about a generally vertical axis. The pump includes a casing which produces a rotating liquid ring therein upon rotation of the casing. Means coacts with the casing and extends downwardly therefrom below the top surface of the liquid in the reservoir portion, wherein actuating liquid is drawn upwardly from the reservoir portion into the casing in a self priming operation upon rotation of the casing. Scoop means is provided interiorly of the casing which communicates with passageway means for directing in a precisely controlled manner the pressurized liquid from the rotating liquid ring to a liquid power control mechanism, such as, for instance, a reciprocal motor unit, which in turn is adapted to control a hydraulic controller, such as, for instance, a valve or other mechanism. The actuator is characterized by being capable of providing precise, highly stabilized control and being of simple construction, requiring no seals between relative movable parts, thus eliminating wear and maintenance problems.

3,742,714
PRESSURE SYSTEM FOR EXPANDING SHAFTS

Charles E. Thomas, Reisterstown, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 22, 1971, Ser. No. 191,725
Int. Cl. F16j 3/00
U.S. Cl. 60—484 7 Claims

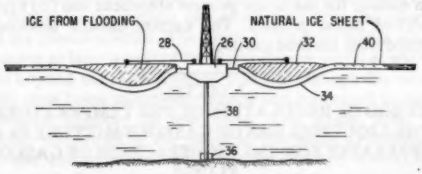


A pressure system for expanding one or both of a pair of coaxially mounted rotatable shafts to secure a plurality of tool elements at preselected locations along the length of the shafts; the pressure system uses a rotary union connected to the end of the expandable shaft through which fluid pressure flows to the shaft, a control valve by which fluid pressure may be maintained and then released from the shaft, a reservoir for receiving the fluid from the shaft when it is contracted, and a pressure supply device which supplies the necessary pressure to the fluid to expand the shaft sufficiently to secure the tool elements on the shaft. The pressure system is preferably hydraulic in nature and is normally used in conjunction with a plurality of pairs of coaxially mounted rotatable shafts where each of the pairs of shafts are spaced circumferentially equidistant about a central common axis enabling a selected pair to be rotated into a workpiece engaging position.

3,742,715
PROTECTING A STRUCTURE IN WATER COVERED WITH SHEET ICE

Kenneth G. Nolte, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed June 9, 1971, Ser. No. 151,334
Int. Cl. E02b 3/00, 15/02
U.S. Cl. 61—1 9 Claims



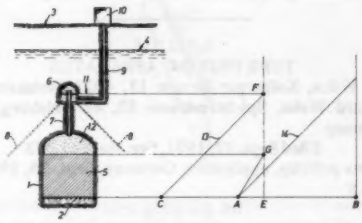
This invention relates to a method of protecting a structure such as a vessel or platform located in water covered with an ice sheet. It especially relates to those areas in which pressure ridges (a region of built up ice rubble formed by thrusting action of two sheets of ice.) occur in the ice such as in the Arctic regions. In a preferred embodiment, a thickened or strengthened section of ice is formed around at least a part of the structure and open water is maintained between the strengthened section of ice and the structure. Just outside the strengthened section of ice is a buffer zone in which the sheet of ice has been weakened such as by cutting trenches partly through the ice. When a pressure ridge occurs in the area of the structure being protected, it is directed through the weakened section of ice around the strengthened section of ice. The pressure ridge should form in the weakened section away from the structure being protected.

If a crack should occur between the legs of a temporary structure, it could damage such structure by pulling the legs apart. Here a weakened section of ice is provided away from the structure to cause the path of the crack to be away from the structure. Ways of strengthening the ice and making the weakened buffer zone are disclosed.

3,742,716
STORING OF GAS UNDER PRESSURE

Arne Backstrom, Stockholm, Sweden, assignor to Svenska Entreprenad AB Sentab, Stockholm, Sweden

Filed July 27, 1971, Ser. No. 166,452
Int. Cl. B65g 5/00; F02c
U.S. Cl. 61—.5 14 Claims



A method of storing gas under pressure in a reservoir comprises applying a pressure of the gas in the reservoir to a surface of a body of liquid outside the reservoir so as to resist leakage of gas from the reservoir. The reservoir may be constituted by an underground cavity, a cavity near the ground or by a container within such a cavity. In one application use is made of a second cavity above the reservoir and a connection from the reservoir opening into the second cavity above an intermediate level, liquid being supplied to the second cavity up to the intermediate level. In another application the reservoir acts as the storage chamber of a compressed air power storage system connected to a water supply. In a third application especially intended for LPG or LNG the reservoir is constituted by a container within a cavity near or below the earth, the container having walls which are separated from the sides of the cavity by a space, the method including introducing a body of liquid comprising a material remaining plastic or liquid at the temperature of the gas to the said space. Also disclosed is apparatus for storing gas under pressure.

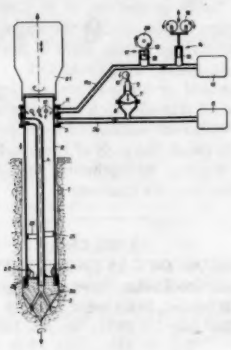
3,742,717
PROCESS FOR GROUND CONSOLIDATION AND REINFORCEMENT OF STRESSED ANCHORAGE PILING INCREASING THE LOAD CAPACITY

Gino Wey, Russelsheim/Main, Germany

Filed June 30, 1971, Ser. No. 158,428
Int. Cl. E02d 3/12, 5/42, 5/44
U.S. Cl. 61—53.52 19 Claims

A process and system for ground consolidation and increasing the load capacity of piles wherein the lower end of a bore hole is enlarged upon injection of a high pressure liquid, the pressure of which is periodically varied at a high frequency to cause compression and consolidation of the surrounding ground area and the widening of the lower end of the bore hole. Reinforcing anchorage structure is mounted within the

bore hole and embedded within hardened concrete or like material, and a stressing steel rod is fixed to the anchorage and



extends upwardly through the bore hole for connection to suitable building support structure mounted at ground level.

3,742,718

TUBE DRIVING APPARATUS

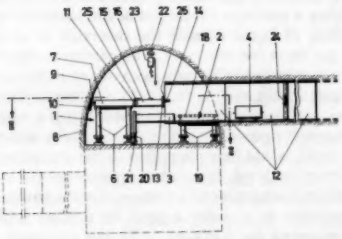
Bruno Weiss, Kolberger Strasse 11, 4021 Metzkausen, and Richard Weiss, Spichernstrasse 52, 41 Duisburg, both of Germany

Filed Sept. 17, 1971, Ser. No. 181,373

Claims priority, application Germany, Sept. 25, 1970, G 70 35 606.8

Int. Cl. E01g *3/03*

U.S. Cl. 61—72.7 **4 Claims**



Apparatus for driving large diameter tubes where only a limited amount of space is available, particularly for driving steel jacket tubes used in constructing reinforced concrete roof beams for underground galleries starting from a pilot gallery. The apparatus consists of ram means carried on a ram support and a tube guide for the tubes which are to be driven. The ram support and tube guide are independent structures and each have legs adjustable in height. Provision is also made for interposing distance pieces between the ram means and the tubes so that rams having a stroke short in comparision with the length of the tubes may be used.

3,742,719

CRYOGENIC REFRIGERATOR

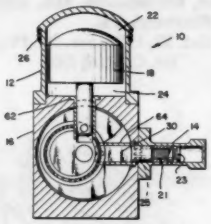
George P. Lagodmos, Palos Verdes, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 16, 1972, Ser. No. 235,275

Int. Cl. F25b *9/00*

U.S. Cl. 62—6 **11 Claims**

A phase angle adjustment mechanism for adjusting the phase angle of cryogen gas displacers in Vuilleumier cycle refrigerators is provided. By this adjustment, the phase angle is



adjusted to accommodate for non-ideal conditions in cycle operation to obtain maximum refrigeration.

3,742,720

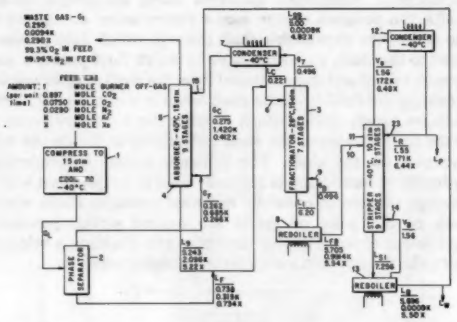
QUANTITATIVE RECOVERY OF KRYPTON FROM GAS MIXTURES MAINLY COMPRISING CARBON DIOXIDE

Don E. Ferguson; Paul A. Haas, both of Knoxville, and Rex E. Leuze, Lenoir City, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 25, 1972, Ser. No. 275,001

Int. Cl. F25j *3/02*, *3/08*

U.S. Cl. 62—17 **10 Claims**



A continuous process for the quantitative recovery of krypton from a feed gas mainly comprising carbon dioxide and also containing minor percentages of oxygen and nitrogen, as well as trace quantities of krypton. The process includes three principal separations: absorption of krypton from the feed gas to provide a krypton-decontaminated waste gas; fractionation of the gases co-absorbed with the krypton; and stripping of the krypton from the absorbent to provide (a) krypton-free carbon dioxide for use as the process absorbent and (b) krypton-enriched liquid product. The carbon dioxide absorbent is derived from the feed gas itself.

3,742,721

METHOD OF REGULATION OF THE TEMPERATURE OF THE LIQUEFIED GAS OR GASEOUS MIXTURE IN AN APPARATUS FOR THE LIQUEFACTION OF GASEOUS FLUIDS

Jean-Marie Bourguet, Le Vesinet, and Jean Charles Perret, Paris, both of France, assignors to Compagnie Francaise D'Etudes Et De Construction Technip, Rueil-Malmaison, France

Filed Aug. 10, 1970, Ser. No. 62,590

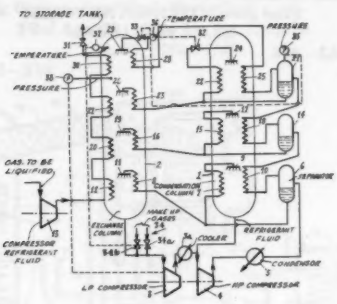
Claims priority, application France, Jan. 8, 1970, 7000526

Int. Cl. F25j *3/00*, *1/00*

U.S. Cl. 62—37 **27 Claims**

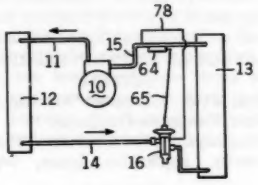
In the liquefaction of a gaseous fluid wherein a refrigerant fluid having at least two components is used, at least two con-

ditions parameters of the refrigerant fluid are determined. The determined values are used to control regulating members of



the flow rates of the refrigerant fluid at specified operations of the liquefaction process.

3,742,722
THERMOSTATIC EXPANSION VALVE FOR REFRIGERATION SYSTEMS
John George Leimbach, Crestwood, Mo., assignor to Spartan Valve Company, St. Louis, Mo.
Filed Feb. 8, 1972, Ser. No. 224,442
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 **14 Claims**

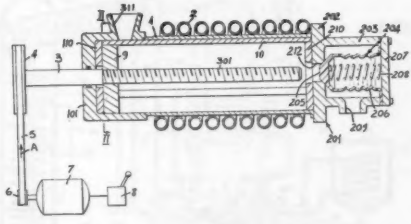


A thermostatic expansion valve for a refrigeration system including a piston movable in a cylindrical chamber formed in the valve body, a first plastic seal carried by the piston and slidably yet sealably engaging the chamber wall, a second plastic seal carried by the piston and selectively engaging a valve seat to close the valve port, the piston having opposed first and second pressure surfaces, the first pressure surface being defined by the valve port and subjected to the pressure in the valve passage at one side of the valve port tending to move the piston toward the open position, and means subjecting the second pressure surface to the same pressure exerted on the first pressure surface and tending to urge the piston toward the closed position. The piston is provided with a nose, constituting at least a part of the first pressure surface, which extends beyond the second plastic seal and through the valve port, the nose being selectively shaped and contoured to vary the nominal capacity of the valve. The piston nose is detachably connected to the piston so that noses of different shapes and contours can be selectively attached to change such nominal valve capacity. The piston assembly includes adjacent first and second piston bodies, the first plastic seal being located against one end of the first piston body, and the second plastic seal being sandwiched between the other end of the first piston body and the second piston body, and the nose being provided with a threaded shank threadedly engaging the first and second piston bodies to clamp the piston bodies and seals together. A push rod extends through a body bore and operatively interconnects a flexible motor element with the valve means for moving the valve means. The body includes a guide portion through which the rod bore extends, the guide portion extending into the valve passage and spaced from the valve means, and being provided with an annular edge about the body bore and push rod. A seal collar of plastic material is slidably yet sealably mounted with a close fit on the push rod between the guide portion and the valve means. A spring about the push rod urges the seal collar against the annular edge to seal the clearance of the body bore between the push rod and the guide portion.

3,742,723
PIPE FREEZING DEVICE
Frederick G. J. Grise, Box 12, West Brookfield, Mass.
Filed Nov. 5, 1971, Ser. No. 195,980
Int. Cl. F25d *3/00*
U.S. Cl. 62—293 **9 Claims**

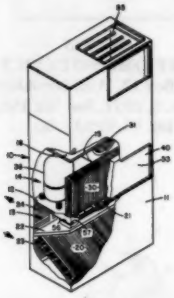
A pipe freezing device comprising a chamber to surround the pipe at the desired point of freezing, a source of Freon or the like liquid under pressure, and a valve for directing gas from the liquid into the bottom portion of the chamber against the pipe, the chamber having a vent for the gas.

3,742,724
ICE CREAM MACHINE
Poerio Carpigiani, Bologna, Italy, assignor to APAW S.A., Fribourg, Switzerland
Filed Mar. 27, 1972, Ser. No. 238,300
Claims priority, application Italy, Apr. 1, 1971, 12608 A/71
Int. Cl. F25c *7/10*
U.S. Cl. 62—331 **6 Claims**



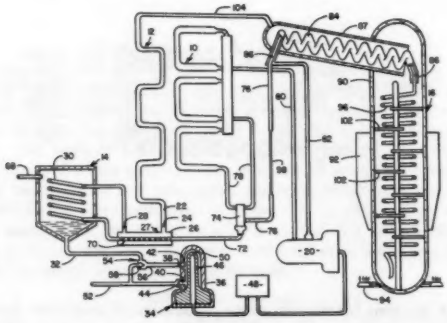
A machine for the batchwise production of ice-cream, comprising a freezing cylinder communicating at one end with a liquid mix feed port and at the opposite end with an ice cream delivery port. Inside of the said freezing cylinder a rotatable beater is mounted, which is entrained in rotation by a disc-like plate. Means are provided for shifting the said disc-like plate axially along the freezing cylinder at the end of the ice-cream mixing and freezing operation, in order to force the produced ice-cream batch from the freezing cylinder out of the delivery port.

3,742,725
AIR CONDITIONING UNIT
Isaac Berger, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,236
Int. Cl. F25d *17/06*
U.S. Cl. 62—419 3 Claims



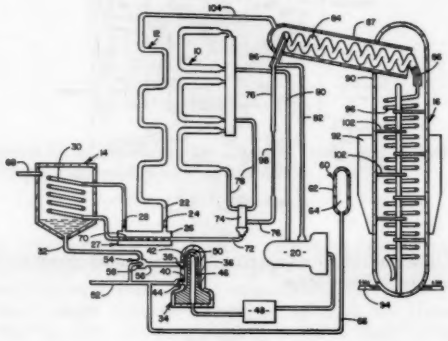
A relatively thin air conditioning unit for modular buildings is provided with a housing having a lower partition and an upper partition which divides the housing into a lower compartment containing a condenser and a condenser fan; a middle compartment containing an evaporator, an evaporator fan and a compressor; and an upper compartment containing a gas or an electric furnace. The lower compartment, including the lower part of the housing, lower partition, the condenser, the condenser fan motor, the evaporator and the compressor are formed as an integral subassembly and mounted to the remainder of the housing by means of interfitting channel shaped side tracks which facilitate disassembly and servicing of the refrigeration section of the unit from the exterior of the building to which the unit is attached.

3,742,726
ABSORPTION REFRIGERATION SYSTEM
Richard A. English, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 2, 1971, Ser. No. 149,280
Int. Cl. F25b *15/04*
U.S. Cl. 62—476 4 Claims



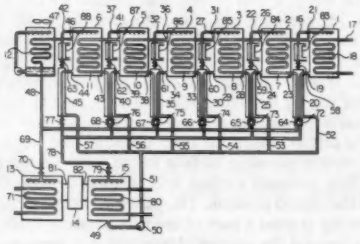
An absorption refrigeration system employing a secondary refrigerant to transfer heat from a suitable heat exchanger to the system evaporator; pump means to circulate absorbent solution and the secondary refrigerant; and ejectors for increasing pump inlet pressures to prevent refrigerant flashing at the pump inlets.

3,742,727
ABSORPTION REFRIGERATION SYSTEM
Kenneth K. Kaiser, Camby, Ind., assignor to Carrier Corporation, Syracuse, N.Y.
Filed June 2, 1971, Ser. No. 149,285
Int. Cl. F25b *15/04*
U.S. Cl. 62—476 1 Claim



An absorption refrigeration system employing a secondary refrigerant to transfer heat from a suitable heat exchanger to the absorption cycle evaporator, a pulser type pump being provided to circulate the secondary refrigerant. A pulsation dampener employing vaporized refrigerant as a compressible cushion is provided to minimize the pulsations produced by the pump.

3,742,728
MULTI-STAGE ABSORPTION REFRIGERATION SYSTEM
Gohee Mamiya, 11-6, Mitsuzawa Kamicho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan
Filed Sept. 15, 1971, Ser. No. 180,640
Claims priority, application Japan, Sept. 25, 1970, 45/83478
Int. Cl. F25b *15/02*
U.S. Cl. 62—476 4 Claims



There is provided an improved multi-stage absorption refrigeration system employing a highly concentrated solution of refrigerant to obtain an increased refrigeration effect relative to the quantity of input heat to the system as compared with a conventional system, comprising a multi-stage regenerator-condenser system and at least a one-stage evaporator-absorber system provided with a pressure elevating device therebetween.

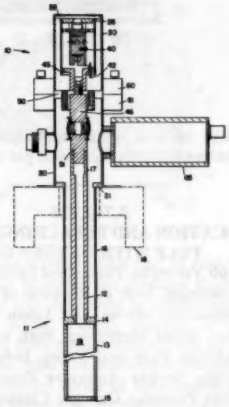
In this evaporator-absorber system, the refrigerant from said regenerator-condenser system is vaporized in the evaporator, subsequently increased in pressure through the pressure elevating device and then absorbed at the increased pressure in the absorber.

3,742,729

ASSEMBLY SHOCK MOUNTING AND HEAT COUPLING SYSTEM

Hans R. Zulliger, Portola Valley, Calif., assignor to United Scientific Corporation, Menlo Park, Calif.

Filed Apr. 23, 1971, Ser. No. 136,673
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 8 Claims



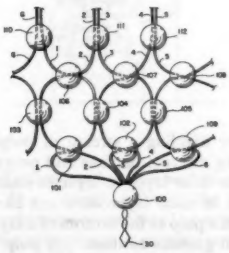
A shock mounting and heat coupling system providing shock free mounting and heat conductive coupling between an assembly such as an X-ray spectrometer and a heat reservoir such as a croystat. Heat coupling is provided by a plurality of strands of heat conducting material connected between the heat reservoir and the assembly to provide a flexible inelastic heat pathway. Structural mounting is provided by a flexible, highly damped, low heat conductive shock absorber connected between the assembly and a housing rigidly extending from the heat reservoir. An X-ray spectrometer using the mounting and coupling system is described.

3,742,730

STRING OF BEADS HAVING PLURAL ROWS WITH DIFFERENTLY ORIENTED BORES

Edgar S. Powell, Jr., 7834 E. Northland Drive, Scottsdale, Ariz.

Division of Ser. No. 831,565, June 9, 1969, Pat. No. 3,650,010.
This application June 10, 1971, Ser. No. 151,982
Int. Cl. A44c *25/00*
U.S. Cl. 63—2 3 Claims



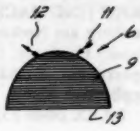
A three-dimensional string of beads using a plurality of at least six cords. The cords are paired and the cords of each pair are criss-crossed in a run through opposite ends of respective beads having horizontally oriented passages. Cords emerging from confronting ends of adjacent ones of the first beads are then paired and the pairs run through respective beads having vertically oriented passages. The steps are repeated as desired. A stand for carrying out the stringing is also disclosed.

3,742,731

GEM HAVING LIGHT PIPING FIBRES WITH CORES OF HIGH REFRACTVE INDEX AND CLAD LAYERS OF LOWER REFRACTIVE INDEX

Michael R. Phillips, and Jerome H. Ludwig, both of Cleveland, Ohio, assignors to Queensbury Opal Co. Ltd., Cleveland, Ohio

Filed June 8, 1972, Ser. No. 261,022
Int. Cl. A44c *17/00*
U.S. Cl. 63—32 11 Claims



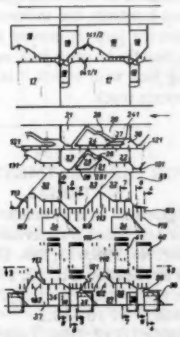
A method of manufacturing gems including artificial gemstones or other works of art displaying the optical effect of single or multi-lined chatoyancy, even asterism, from fiber optical materials. Simulated gemstones of glass fiber optical materials are characterized by hardness, density and refractive index approximating naturally occurring rare minerals, yet the gemstones display beauty and optical effects rarely seen in the natural minerals. Doublet gemstones are also made by mounting natural or synthetic gemstones or light-transmitting materials, normally devoid of chatoyancy or asterism, onto a properly fashioned and oriented fiber optical base plate so that single or multi-lined chatoyancy is fascinatingly observed in such materials as if the materials themselves were chatoyant or asterismal. Gemstones of emerald, ruby, opal, topaz, peridot, amethyst and other transparent or semi-transparent cabochoned gems are provided with chatoyancy or multi-lined chatoyancy, even asterism. Also, natural mineral gemstones which exhibit poor chatoyancy or asterism are provided with enhanced optical effects by mounting onto a properly fashioned and oriented fiber optical base plate. Enhanced chatoyant or asterismal gemstones or chrysoberyl, sapphire, tourmaline and the like are made according to the method disclosed.

3,742,732

JACQUARD PATTERN CONTROL ARRANGEMENT FOR CIRCULAR KNITTING MACHINES

Ernst-Dieter Plath, Tailfingen/Wuertt., Germany, assignor to Firma Mayer & Cie Maschinenfabrik, Tailfingen, Germany

Filed Nov. 23, 1970, Ser. No. 91,989
Claims priority, application Germany, Nov. 24, 1969, P 19 58 846.6
Int. Cl. D04b *15/68*, *15/74*
U.S. Cl. 66—42 3 Claims



Method of and apparatus for increasing the number of control signals from Jacquard pattern control mechanism to cir-

cular knitting machines. Two different kinds of needle jacks are employed, such jacks of different types being used in pairs having one of each type of jack. For each knitting system there are provided two pattern selection stations or positions of which at least one affords the selection of both needle jack types. Each needle selection station activates at all times only one of both needle jack types. In the embodiment shown there is thus provided a doubling of the control signals from Jacquard pattern control mechanism to circular knitting machines.

3,742,733

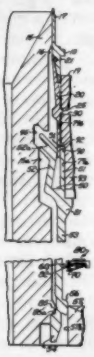
KNITTING MACHINE

Horst Paepke, Rottenburg am Neckar, Germany, assignor to The Warren & Swasey Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 824,227, May 13, 1969, abandoned. This application June 4, 1971, Ser. No. 150,052

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R 10 Claims



A circular knitting machine comprises a rotatable knitting needle cylinder which carries a plurality of knitting needles through knitting stations. A needle-moving jack is pivotally connected with each of the knitting needles and is movable in a needle-raising stroke and a needle-lowering stroke to effect needle raising and lowering, respectively. Each of the needle-moving jacks has a butt thereon which is received in a cam track which operates to effect the raising and lowering of the needle-moving jack. A mechanism is provided for controlling the operation of each knitting needle as it progresses through the stations. The mechanism specifically effects pivoting of the needle-moving jack so that the butt thereof is removed from the cam track. The means which effects the pivoting movement of each needle-moving jack comprises a movable selector jack which cooperates with the needle-moving jack and effects the pivoting movement of the needle-moving jack in response to actuation of electromagnetic means. The electromagnetic means controls the movement of each selector jack so that a selector jack is moved to effect the pivoting movement of the needle-moving jack or not moved to allow the needle-moving jack with which it is associated to remain with its butt in the cam track.

3,742,734

APPARATUS FOR THE TREATMENT OF PERMEABLE MATERIAL

Heinz Fleissner, Egelsboch near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

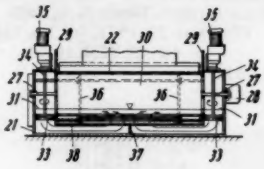
Division of Ser. No. 798,073, Feb. 10, 1969, Pat. No. 3,566,629. This application Oct. 22, 1970, Ser. No. 83,240

Claims priority, application Germany, Jan. 7, 1969, P 19 00 496.7; Feb. 10, 1968, P 17 10 480.2

Int. Cl. B05c *3/132*; D06c *1/08*; D06f *39/08*

U.S. Cl. 68—5 D 20 Claims

The present disclosure is directed to an apparatus for treating textile materials with a treatment medium wherein the surface of the conveying means can be adapted to efficiently treat different widths of said textile materials. The present apparatus is effective for both liquid and gas treatment mediums.



3,742,735

DELIGNIFICATION AND BLEACHING OF CELLULOSE PULP WITH OXYGEN GAS

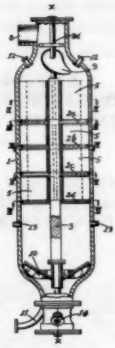
Abraham Jacob Verreyne, Petersfield Springs; Leonard Austin Job, Johannesburg, both of Republic of South Africa; Paul Rerolle, Nogent-sur-Marne, and Johan Christoffer Fredrik Carl Richter, Alpes Maritimes, both of France, assignors to South African Pulp and Paper Industries Limited and L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, and Aktiebolaget Kamyr

Division of Ser. No. 840,639, July 19, 1969, Pat. No. 3,660,225. This application Jan. 27, 1972, Ser. No. 221,263

Claims priority, application Sweden, July 11, 1968, 9640/68; July 15, 1968, 9689/68; Jan. 22, 1969, 868/69; South Africa, Oct. 14, 1968, 68/6629

Int. Cl. D21c *9/10*; B01f *15/02*

U.S. Cl. 68—5 D 8 Claims



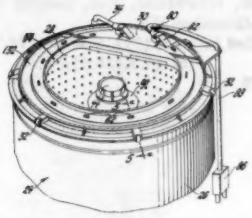
Apparatus for dividing a stream of pulp into a series of layers containing discrete batches and progressively transferring the batches from layer to layer in controlled fashion so that the height of each layer does not exceed a maximum value at which the pulp at the bottom of a layer has a predetermined minimum gaseous content. The pulp is contacted with oxygen gas under pressure while progressively transferring pulp from one layer to the next in a series. The apparatus comprises a cylindrical pressure vessel including axially spaced floors which define chambers between them, the chambers being subdivided axially into compartments, each floor having an aperture and the compartments and floors being relatively movable to allow pulp in the compartments sequentially to be transferred from one chamber to the next as relative movement occurs.

3,742,736

PERIPHERAL FILL SYSTEM FOR A CLOTHES WASHER

Austin D. Fish, Tipp City; William G. Fisher, Vandalia, and Robert F. Brubaker, Eaton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 55,813, July 17, 1970, Pat. No. 3,663,975.
This application Feb. 29, 1972, Ser. No. 230,237
Int. Cl. D06f *39/06*; E03c *1/02*
U.S. Cl. 68—23.5 4 Claims



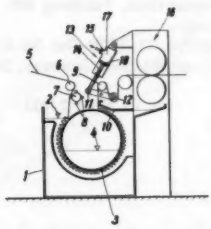
A domestic clothes washer has a pair of nested tubs one of which is imperforate to retain the washing fluid, the other of which is perforated and rotatable to centrifuge the washing fluid from clothes being washed therein. A peripheral fill system includes a fill tube circumscribing the top of the nested pair of tubs. The fill tube has transverse rectangular slots to provide a circumferential series of fan-shaped sprays for improved wetting and immersing of the clothes at the start of a clothes washing cycle, for flushing suds from the nested pair of tubs prior to rinsing and for faster release of the tub-adhered clothes during rinse fill. The peripheral fill system includes a vacuum breaker directly connecting a domestic water supply to the fill tube for effecting pressurized sprays to the tubs without back siphoning of washing fluid.

3,742,737

DEVICE FOR THE TENSION-FREE WET TREATMENT OF TEXTILE MATERIAL LENGTHS

Heinz Fleissner, Egelsbach, Germany, assignor to Vepa AG, Basel, Switzerland

Filed May 4, 1971, Ser. No. 140,029
Claims priority, application Germany, May 4, 1970, P 20 21 699.3; Mar. 19, 1971, P 21 13 473.6
Int. Cl. B05c *3/134*
U.S. Cl. 68—177 9 Claims



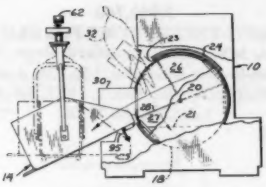
A device for effecting tension-free wet treatment of textile material lengths (e.g., sheets, webs or the like continuous material) which comprises a wash bowl containing a predetermined level of processing liquor, a rotating perforated drum at least partially immersed in the processing processing liquor, and guide means for feeding the textile material as wave-like plaits onto the perforated drum and for removing the plaits from the drum. The guide means includes a beating device for forming the textile material into the wave-like plaits on the perforated drum. This device contacts the textile material above the level of liquor in the bowl, and the drum rotates at a speed which is lower than the speed at which the textile material is fed into the bowl onto the drum.

3,742,738

LAUNDRY HANDLING SYSTEM AND EQUIPMENT

Charles J. Frotriede, Highland Heights, Ky., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 26, 1971, Ser. No. 166,007
Int. Cl. D06f *39/00*
U.S. Cl. 68—210 12 Claims



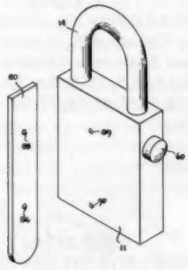
A laundry handling system and equipment including overhead support rails and carriers suspended therefrom and adapted to receive laundry goods from and transfer them about a plant to respective units of laundring or finishing equipment. The support rail concept provides power lifting the carriers against gravity and then allowing them to move by gravity and/or with operator assist throughout the various operative positions. The specific carriers have bumpers to allow adjacent like carriers to contact one another without damage and further have rigid scoop like body structures suited for holding loose laundry goods without dropping same. Carrier support means below the support rail are provided for swiveling the carrier about a vertical axis to allow the carrier to be nosed into registry with the loading and unloading openings of the units and are also provided for swiveling the carrier about a horizontal axis centrally through the carrier for tilting the carrier bottom wall as required for easy loading, for reliable transit, and for easy unloading of the goods. Also provided are lock means to hold the carrier against swivel in certain set positions as required. The specific carrier shapes and sizes and swivel mountings allow handling wet heavy goods and dry fluffed up goods.

3,742,739

MAGNETIC LOCK

Henry E. Hickman, Lawndale, Calif., assignor to Ernest Orsi, d/b/a Orco Products, Beverly Hills, Calif.

Filed July 31, 1972, Ser. No. 276,358
Int. Cl. E05b *47/00*, *67/22*
U.S. Cl. 70—38 B 9 Claims



A plurality of tumblers are rotatably mounted in the main body portion of a lock, these tumblers having keyways formed therein. Each of the tumblers has a magnetic pole piece imbedded therein, these pole pieces being located at a predetermined angular position about the rotation axis of the tumblers relative to the keyways, the tumblers having common rotation axes. A bar member is mounted adjacent to the tumblers, this bar member having a finger portion extending therefrom which is adapted to fit into the tumbler keyways. A magnetic

key is utilized to open the lock, this key having magnetic pole pieces imbedded therein of opposite polarity to corresponding pole pieces in the tumblers. The key pole pieces are thereby drawn opposite corresponding tumbler pole pieces to rotate the tumblers to bring the keyways thereof into alignment with the finger portions of the bar member. This permits an actuator arm to drive the latch for the lock so as to open the lock.

3,742,740

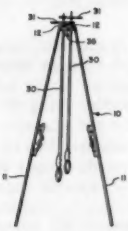
ANTI-THEFT DEVICE FOR SKIS

Ewald D. Pyzel, 3430 Cashill Boulevard, Reno, Nev.

Continuation-in-part of Ser. No. 130,235, April 1, 1971, abandoned. This application Feb. 2, 1972, Ser. No. 222,868

Int. Cl. E05b *73/00*

U.S. Cl. 70—58 5 Claims



An anti-theft device for skis comprises a U-shaped bolt that is received and releasably locked in place in bolt-receiving openings disposed immediately adjacent the pointed forward end of each ski of a pair of skis. The bolt-receiving openings have a polygonal cross-section which corresponds to the polygonal cross-section of the arms of the U-shaped bolt received in said openings. The axis of each bolt-receiving opening is disposed at an angle with respect to the longitudinal axis of the skis with which the opening is associated, the angle at which said bolt-receiving openings are disposed being such that the skis are rigidly fastened together with the upper surfaces of said skis facing each other and with the main body portion of said skis disposed at said angle with respect to each other when the arms of the U-shaped bolt are received in said bolt-receiving openings, thereby rendering the skis conspicuous and awkward to carry. The transverse portion of the U-shaped bolt may be formed with a pair of pole-receiving slots that receive the shafts of a pair of ski poles, thereby locking the poles to the skis.

3,742,741

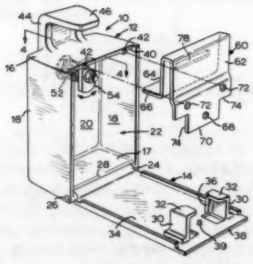
KEY RECEPTACLE FOR AN AUTOMOTIVE VEHICLE

Leslie Lawrence Cahan, 400 Walmer Road, Park Towers West, Penthouse 5, Toronto, Ontario, Canada

Filed Apr. 3, 1972, Ser. No. 240,513

Int. Cl. E05b *65/52*, *73/00*; E05q *1/04*

U.S. Cl. 70—63 6 Claims



A key receptacle for attachment to an automotive vehicle, in which a housing with a hinged cover has a U-shaped flange with one leg engageable with the housing when the cover is closed. The housing carries a brace with a tongue spaced from the housing and intersecting the other leg of the flange when the flange is engaged with the housing. The flange is reversible in engagement with the housing to provide a hook for attachment to the opened window of the vehicle.

3,742,742

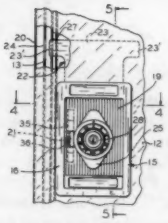
INSET LOCK FOR LOCKERS AND THE LIKE

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Aug. 25, 1971, Ser. No. 174,773

Int. Cl. E05b *65/02*

U.S. Cl. 70—78 8 Claims



The door of a locker or the like has a portion of its front face recessed to receive a lock mechanism (either permutation, or key operated, or both) with the forward-most portion of the lock mechanism being inwardly of or flush with the front face of the major portion of the locker door. The lock mechanism employs a spring bolt which is retracted and released when the lock is properly operated through its permutation mechanism or the turning of an inserted key. The door is devoid of the usual operating handle and when the spring bolt is released the vertically reciprocating latching bar carried by the inner face of the locker door can be lifted and released for door opening purposes, by using the dialing knob or an inserted key as a handle.

3,742,743

ANTI-THEFT DEVICE FOR MOTOR VEHICLES

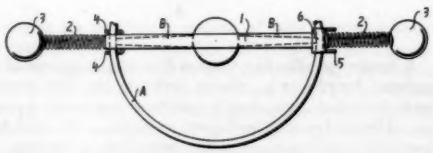
Dragoslav S. Stoyanovitch, Feldberg Str. 22, 78 Freiburg-Hasloch, Germany

Filed Dec. 11, 1970, Ser. No. 65,633

Claims priority, application Germany, Sept. 1, 1969, P 19 44 299.0

Int. Cl. B60r *25/02*

U.S. Cl. 70—209 6 Claims



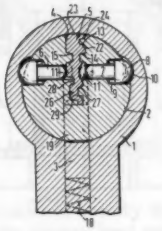
This anti-theft device consists of an elastic member ending with a soft ball, which is provided with a flexible metal net. By means of a bar, to which the other end of the said member is attached, this device can be fixed in a detachable way to the steering wheel.

3,742,744

PIN TUMBLER LOCK SYSTEM

Edgar Lumme, Telgte/Westfalen, Germany, assignor to Aug. Winkhaus, Telgte/Westfalen, Germany

Filed Jan. 19, 1971, Ser. No. 107,679
Claims priority, application Germany, Jan. 23, 1970, P 20 03 059.5
Int. Cl. E05b 27/06
U.S. Cl. 70—358 10 Claims



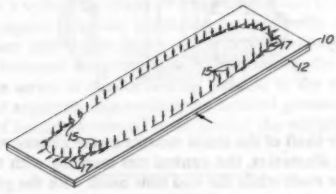
A pin tumbler lock of the Yale type additionally equipped with blocking pins spaced in the direction of the cylinder axis in respective bores which extend in the cylinder in a common plane perpendicular to the plane of the key slot and are freely movable in the associated bores between a position in which their rounded outer ends engage a concavely arcuate groove in the lock case and a position in which their similarly rounded inner ends engage corresponding lateral recesses or a groove in the key, the blocking pins permitting a further increase of the number of combinations available in a lock system having a common master key.

3,742,745

METAL FORMING METHOD AND APPARATUS

Paul F. Swenson, Sr., Cleveland, Ohio, assignor to Great Lakes Sports Mfg. Co., Cleveland, Ohio

Filed Aug. 31, 1971, Ser. No. 176,519
Int. Cl. B21d 24/04
U.S. Cl. 72—54 14 Claims



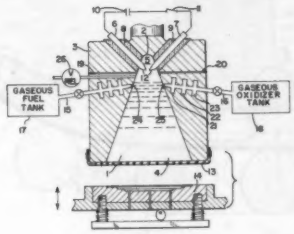
The specification and drawings disclose a method and apparatus for forming dish-shaped metal elements through the use of a combined fluid pressure and sheet tensioning process. The disclosed method is particularly intended for forming dish-shpaed sheet metal elements having a length substantially greater than their width and includes applying a longitudinal tension to the sheet while permitting the lateral edges to move toward one another substantially unconstrained while the fulid pressure acts to bow the sheet. The disclosed apparatus includes a flexible frame of generally eliptical shape which clamps to the edge of the sheet. The frame is arranged so that as the sheet bows outwardly, the lateral sides of the frame are pulled inwardly driving the ends of the frame apart.

3,742,746

ELECTROHYDRAULIC PLUS FUEL DETONATION EXPLOSIVE FORMING

Paul M. Erlandson, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,647
Int. Cl. B21d 26/08
U.S. Cl. 72—56 3 Claims



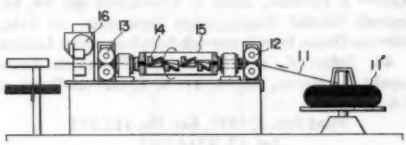
This apparatus provides improved forming with reduced electrode wear by exploding a mixture above a liquid. The liquid rests against a membrane stretched across the lower part of the chamber. When the mixture explodes pressure is exerted through the membrane to form a workpiece against a die.

3,742,747

METHOD FOR SHAPING INDENTED STEEL WIRE AND APPARATUS THEREFOR

Yoshikiyo Fukushima, Tokyo, and Tadashi Akagi, Shimodate, both of Japan, assignors to Nippon Concrete Industries Co., Ltd., Minato-ku, Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,171
Int. Cl. B21b 15/02
U.S. Cl. 72—68 8 Claims



This invention relates to a method for shaping an indented steel wire characterized by comprising the steps of causing a coil shaped steel wire material to pass between working rolls consisting of a plurality of work rolls having convex portions immediately before applying said steel wire to a straightening machine to form it into a rectilinear shape thereby to shape a strip or several strips of rectilinear indentation around the outer periphery of the steel wire; then causing said steel wire to pass through a straightening machine thereby to automatically form one strip or several strips of spiral indentations; and cutting said wire material into a predetermined dimension by means of a cutter; and further to a device therefor.

3,742,748

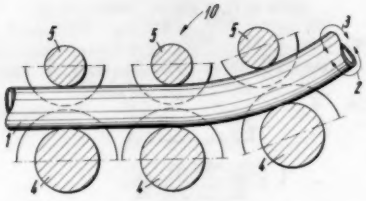
METHOD AND APPARATUS FOR PRODUCING AN ANNULAR COLLAR FROM A PIPE IN A HOT STATE

Karl Horst Ehm, Mulheim/Ruhr, Germany, assignor to Demag Aktiengesellschaft, Duisberg, Germany

Filed June 21, 1971, Ser. No. 154,775
Claims priority, application Germany, July 3, 1970, P 20 32 937.7
Int. Cl. B21d 9/10
U.S. Cl. 72—166 9 Claims

A method of producing an annular tubular collar from a tube or pipe in a hot state and without introducing transverse

forces which tend to deform the cross-section of the tube and using pairs of opposed rollers each pair including an inside roller arranged on the inside of the pipe bend and an outside roller arranged on the outside of the bend, comprises regulating the peripheral speed of the inside and outside rollers to produce a braking effect by the inside rollers on the tube. The apparatus includes at least three pairs of oppose rollers between which the pipe to be bent is directed, and, in one embodiment, the inside rollers are made with a relatively small diameter compared to the outside rollers and in another arrangement, the inside rollers have a larger diameter than the outside rollers. In each case, the inside rollers are driven at a peripheral speed so that they provide a braking action on the tube to effect an imposition of a longitudinal force directed opposite to the direction of passage to enhance the bending of the pipe and to reduce transverse forces acting on the pipe which tends to distort its cross-section.



3,742,749

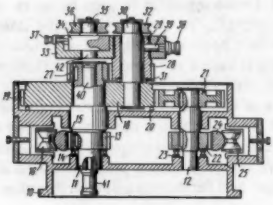
TUBE-COILING MACHINE

Vitaly Tikhonovich Bondarenko, ultisa, Dnepropetrovskaya, 8, kv. 4; Jury Nikandrovich Markin, Kommunisticheskiy prospekt, 49/2, kv. 32, both of Rostov-na-Donu; Nikolai Stefanovich Voronov, ultisa B. Khmelnitskogo, 68, kv. 18, Belgorod; Nikolai Magdygovich Sagiryants, 30 linia, 37, Rostov-na-Donu; Ivan Ivanovich Salnikov, ultisa Lenina, 56, kv. 44, Belgorod, and Konstantin Pavlovich Petrenko, prospekt K. Marxa, 36/38, kv. 6, Rostov-na-Donu, all of U.S.S.R.

Filed Feb. 3, 1971, Ser. No. 112,212

Int. Cl. B21d *7/02*

U.S. Cl. 72—217 **2 Claims**



A tube-coiling machine in which a bending device with two rolls and bearing rollers secured on the frame is provided with a tube-feeding carriage and its drive.

The bending rolls are located on a crank whose axle is secured on the carrier of a first drive shaft while the toothed rim of said carrier interacts with a gear of the second drive shaft. The crank and the carrier drive shaft have retainers which are operated in accordance with the particular roll selected for rolling around the other roll.

3,742,750

ROLLER PRESS

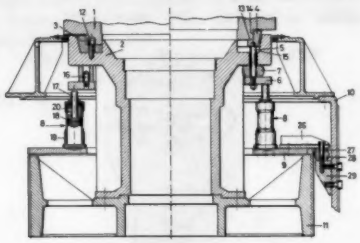
Theodorus Jacobus Heesen, Boxtel, Netherlands, assignor to Simon-Heesen N.V., Boxtel, Netherlands

Filed Feb. 19, 1971, Ser. No. 116,822

Claims priority, application Netherlands, Feb. 25, 1970, 7002665

Int. Cl. B21b *31/08*

U.S. Cl. 72—238 **8 Claims**



A die is mounted in a roller press by means of sprung clamping segments, which can be eased by means of hydraulic jacks for replacing the die.

3,742,751

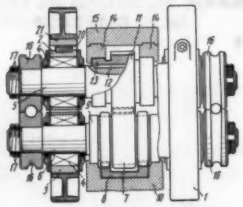
WORKING STAND OF COLD-ROLLING TUBE MILL

Sergei Nikolaevich Kozhevnikov, ulitsa Vystavochnaya, 3, kv. 73, Kiev; Jury Ivanovich Cherevik, ulitsa Belostotskogo, 114, kv. 1, Dnepropetrovsk; Arkady Semenovich Tkachenko, prospekt Gagarina, 63, kv. 22, Dnepropetrovsk; Bronislav Mecheslavovich Klimkovsky, ulitsa Universitetskaya, 1, kv. 12, Dnepropetrovsk; Anton Antonovich Shvedchenko, ulitsa Pestelya, 8, kv. 1, Nikopol, and Vladimir Vasilievich Pljusnin, ulitsa Kosiora, 29-b, kv. 36, Dnepropetrovsk, all of U.S.S.R.

Filed Mar. 10, 1972, Ser. No. 233,516

Int. Cl. B21b *17/00, 35/12*

U.S. Cl. 72—249 **1 Claim**



The lower shaft of the stand mounts a gear cluster with rims of different diameters, the central rim meshing with the gear of the upper shaft while the end rims mesh with the gear rack secured in the lower part of the housing.

3,742,752

PLUNGER FOR EXTRUSION PRESS

Bruno Maier, Worblingen, Germany, assignor to Swiss Aluminium, Ltd., Neuhausen am Rhinefall, Switzerland

Filed Aug. 10, 1971, Ser. No. 170,546

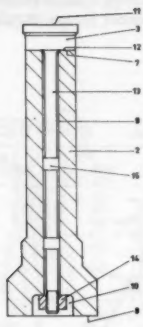
Claims priority, application Switzerland, Aug. 14, 1970, 12233/70

Int. Cl. B21c *25/00*

U.S. Cl. 72—273 **5 Claims**

Disclosed is an elongated plunger body having an axial through-bore; a pressure head arranged for radial movement on the front face of the plunger body; a stem secured to the pressure head and passing with a clearance through the

through-bore; the stem being formed at a central region thereof with a collar tightly fitting in the through-bore, and at the other end thereof being secured to the plunger body and



locked against axial movement, whereby the flexibility of the stem portion between the pressure head and the collar allows elastic centering of the pressure head during the stroke of the plunger.

3,742,753

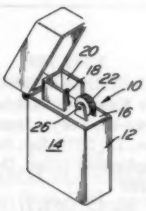
METHOD OF CONSTRUCTING A SPARK WHEEL

Ginn Biesenbach, 120 Madison Avenue, Reading, Pa.

Filed Aug. 16, 1972, Ser. No. 280,954

Int. Cl. B21d *28/00*

U.S. Cl. 72—340 **5 Claims**



A method of constructing a spark wheel for cigarette lighters and the like which comprises subjecting the peripheral surface of a cylindrical blank to a knurling action to form a series of angular grooves separated by upwardly extending peaks, then cutting the peaks off to form relatively flat land portions between the grooves, and then cutting the land portions by a series of cuts extending parallel to the axis of the blank and angularly intersecting the knurled grooves, to form a series of linearly arranged teeth around the periphery of the blank.

3,742,754

GAGING DEVICE FOR CRIMPING MACHINE

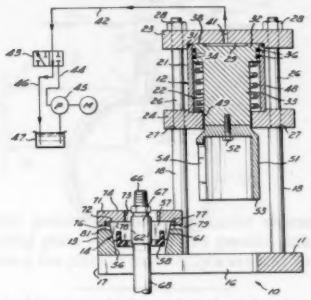
James R. Jeromson, Jr., Willoughby, and Karl K. Chen, Cleveland Hts., both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 191,366

Int. Cl. B21d *41/00*

U.S. Cl. 72—402 **10 Claims**

In a machine of the type in which a fitting is radially crimped on a hose by a contractible collet, an arrangement wherein a collet, fitting, and hose may be assembled in a die ring at an unobstructed loading position on a machine bed plate before the die ring is moved laterally on the bed plate into a crimping station in alignment with an axis of a ram. The bed plate includes a slot from the loading position to the crimping station for passage therethrough of a hose extending from the die ring. The ram includes a slot, in alignment with the bed plate slot, for radial passage of a fitting portion therethrough to thereby minimize the ram stroke. A reversible pressure plate positionable on the collet and engageable by the ram evenly distributes the ram force to the collet area under the ram slot and,when it stops against the die ring, gages



the final crimped sleeve diameter. At least one side of the plate is counterbored to receive a portion of the collet therein to selectively change the final crimped sleeve diameter from that produced when the opposite side is used to engage the collet and die ring.

3,742,755

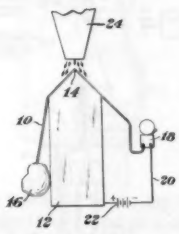
ELECTRICAL INSULATION THERMAL SOFTENING DETECTION DEVICE

Hugh B. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1971, Ser. No. 159,430

Int. Cl. G01n *25/00*

U.S. Cl. 73—15 R **4 Claims**



A device to measure the thermal softening point of electrical insulating coatings on electric conducting members is described. The device includes an electrically conducting body, a cutting edge electrically attached to the body, an electric source and current sensing means in series with the insulated conducting test member. A weight is attached to one end of the test member to transmit a force to the test member and downwardly against the cutting edge. The sensing means is suited to respond when the cutting edge severs the insulation at the softening temperature; the heat being provided by a regulatable heating means.

3,742,756

ACCESS DUCT FOR PIPELINES

William Harold Seager, Edmonton, Alberta, Canada, assignor to W. H. Seager and Associates Ltd., Edmonton, Alberta, Canada

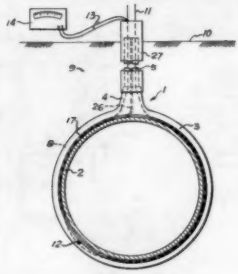
Filed Apr. 8, 1971, Ser. No. 132,350

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.8 S **7 Claims**

A circular duct is mounted on the circumferential, bared surface of a buried, coated pipeline so that the duct and pipe surface combine to define a sealed, circumferential chamber.

A vertical conduit, defining in and out ports, extends upward from the duct through the dirt fill over the line. The ports provide communication between the ground surface and the duct chamber. A steel tape, having an ultrasonic probe mounted



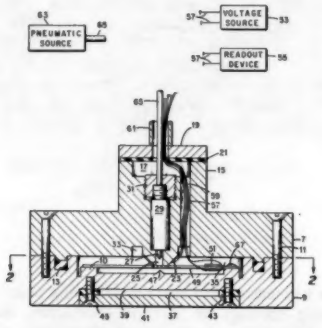
thereon, can be threaded through the assembly to bring the probe into contact with the pipe wall to take wall thickness readings. Scales on the tape serve to locate the position of the hidden probe.

3,742,757

CELL FOR MEASURING STRESSES IN PRESTRESSED CONCRETE

Joseph C. Callahan, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 18, 1972, Ser. No. 298,740
Int. Cl. G01b 7/16
U.S. Cl. 73—88.5 R **5 Claims**



A compact embedment device has been provided for determining changes of stress in prestressed concrete structures. Stress forces are applied to opposite sides of the cell whereby a deflection of an internal member is proportional to the stress. Any changes are detected by variations in the output of strain gages attached to the internal member. Temperature effects are nullified by using titanium as a material of construction, and periodic drift checks may be made with an internal pneumatic ram actuated from an external air pressure source.

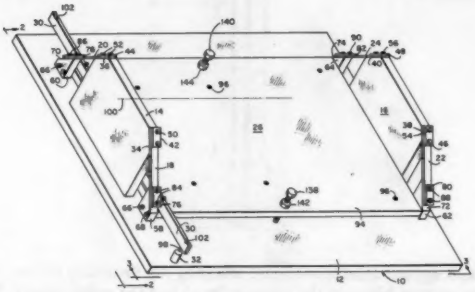
3,742,758

TORQUE REACTION TABLE

Eugene Pohl, 321 Leona Avenue, Huntingdon Valley, Pa.

Filed Aug. 8, 1972, Ser. No. 278,786
Int. Cl. G01l 3/00
U.S. Cl. 73—134 **12 Claims**

A torque reaction table for dynamic torque testing and measurement, including a pair of end positioned pedestals which affix to the transverse edges of a base and which are arranged to support a load carrying table above the base. Flexure straps of predetermined width and cross sectional dimensions connect between the respective top corners of the pedestals and the corners of the table a manner to carry the table and to maintain the supporting flexure straps in tension under all load conditions. The flexure straps angularly mount and precisely



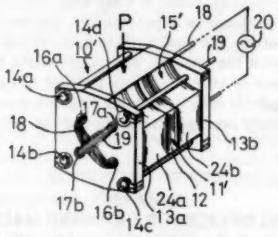
position so that the intersection of extensions of the planes at which the flexure straps are mounted align with the center of rotation of a device used to develop torque. A table mounted torque arm laterally extends from the table and is connected to a reaction sensor which is arranged for direct electrical torque readout in response to the deflection of the load carrying table.

3,742,759

MECHANICAL STRESS DETECTING DEVICE

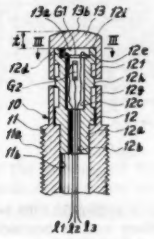
Kazuo Nishimura, c/o Kabushiki Kaisha Meidensha, No. 2-1-17, Osaki, Shinagawa-ku, Tokyo, Japan

Filed Nov. 13, 1970, Ser. No. 89,175
Claims priority, application Japan, Dec. 3, 1969, 44/96924; Oct. 14, 1970, 45/90209
Int. Cl. G01l 1/12
U.S. Cl. 73—141 A **4 Claims**



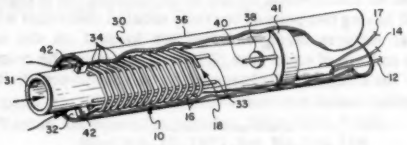
A device for detecting a mechanical stress which comprises a stock of closely laminated magnetic plates, a pair of nonmagneitc retaining plates securely mounted on both ends of the stack of the magnetic plates by means of bolts so as to form a core, four apertures extending through the core an exciting coil passing through a first pair of the apertures and a detecting coil through a second pair of the apertures, the planes of the coils being normal to each other and wherein the core has a monoaxial magnetic anisotropy established by energizing a magnetizing coil passed through said first pair of apertures while the temperature of the stack decreases from the Curie point of the magnetic material.

3,742,760
LOAD TRANSDUCER
Yoshimi Kato, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Aug. 1, 1972, Ser. No. 276,933
Claims priority, application Japan, Aug. 1, 1971, 46/57629
Int. Cl. G01l 1/22
U.S. Cl. 73—141 A 9 Claims



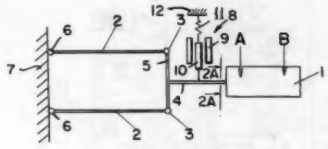
A load transducer comprises a strain column having an axial bore therein and a pair of strain gauges, one of which is fastened on one end of the strain column across the open axial bore and the other of which is bonded on the inner cylindrical surface of the bore being disposed in the axial direction therein. The strain gauges are fabricated into an electrical bridge circuit together with other electrical resistance means. Upon application of an axial load to the strain column, the strain gauges are strained in accordance with Poisson's ratio, whereby the axial load is measured with high accuracy and high sensitivity.

3,742,761
THERMAL FLOWMETER
Richard L. Randall, Van Nuys, Calif., assignor to North American Rockwell Corporation, Canoga Park, Calif.
Filed July 29, 1971, Ser. No. 167,396
Int. Cl. G01f 1/00; G01p 5/10
U.S. Cl. 73—204 6 Claims



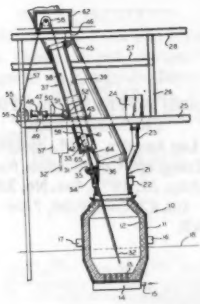
A flowmeter for determining the rate of flow of a fluid through a conduit including a thermocouple immersed in the fluid, means for heating the thermocouple to a temperature above the temperature of the flowing fluid and means for recording the thermocouple voltage. The thermocouple is typically helically shaped with the thermocouple junction at the downstream end of the helix. The thermocouple voltage can be related to the rate of flow of the fluid through the conduit.

3,742,762
IMPACT-TYPE POWDER/GRANULE FLOW METER
Hiroshi Tomiyasu, No. 162-2, Nagao, Kanagawa-ken, Kawasaki, Japan
Filed Apr. 1, 1971, Ser. No. 130,233
Int. Cl. G01f 1/00
U.S. Cl. 73—228 3 Claims



Impact-type powder/granule flow meter characterized in that a detecting plate is supported by parallel linkage means for constraining the plate to move only a vertical direction.

3,742,763
THERMOCOUPLE LANCE HANDLING DEVICE
Stanley T. Sczerba, McKeesport, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed July 22, 1971, Ser. No. 165,019
Int. Cl. G01k 1/14
U.S. Cl. 73—343 R 9 Claims

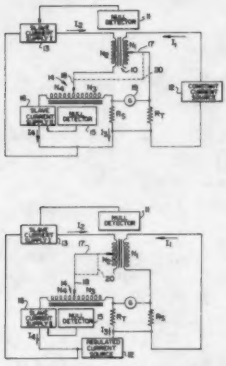


A thermocouple lance for measuring the temperature of molten metal in a vessel is mounted on a carriage which moves on tracks longitudinally of a carriage support which is external to the vessel. The carriage support is normally clamped at an acute angle with respect to vertical but it may be released and swung on a pivot to a vertical position sidewise of the vessel. A hoist is provided for retracting the carriage supported lance away from and out of the vessel. An air operated cylinder swings the carriage support away from the vessel and, after removal of some guide rollers, the carriage and lance may be withdrawn from the support and lowered on the hoist cable for maintenance or replacement at floor level.

3,742,764
DIRECT READING RESISTANCE THERMOMETER
Thomas M. Dauphinee, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Feb. 24, 1972, Ser. No. 229,092
Int. Cl. G01k 7/20
U.S. Cl. 73—362 AR 3 Claims

A direct reading resistance thermometer in the form of an electrical bridge having a first current comparator for bridge balance and a second current comparator in an arm of the bridge and having its adjustable tap ganged to that of the first.

The current comparators are of the type having windings on a magnetic core and null detector and current control means for



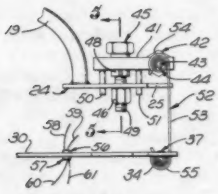
providing ampere-turn balance. By proper interconnection the output of the bridge is a quadratic function which is required to give the necessary direct reading.

3,742,765

STATIC AND DIFFERENTIAL PRESSURE TRANSDUCERS

Mason F. Arnold, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,844
Int. Cl. G011 *9/04, 7/04*
U.S. Cl. 73—398 AR **5 Claims**



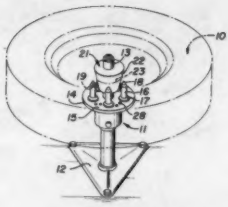
Apparatus for accurately producing a D.C. current or voltage directly proportional to the static pressure of a fluid or proportional to the difference between the pressures of the same or different fluids. A mechanical connection is made between a pressure sensor and the free end of a cantilever beam having strain gages fixed thereto. The strain gages are connected in a bridge across which a pressure analog is derived. The mechanical connection includes a strip snap fit over ball bearings mounted on the beam and carrier means fixed to the sensor. The ball bearings double the accuracy of the apparatus achieved with solder connections between the strip, carrier means and beam. The disclosed apparatus also improves the stability of the transmitter output versus time.

3,742,766

MOUNT FOR WHEEL BALANCER

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed June 5, 1972, Ser. No. 259,993
Int. Cl. G01m *1/12*
U.S. Cl. 73—484 **8 Claims**



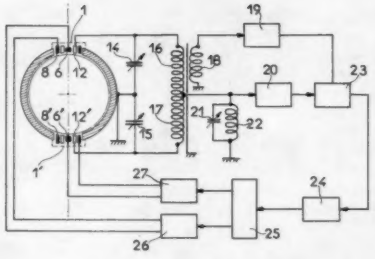
A plurality of bolt hole engaging pins are freely movable on a flat supporting surface and a centering cone is slidably mounted on the spindle of the balancer for centering the wheel relative to the spindle.

3,742,767

BALL ELECTROSTATIC ACCELEROMETER

Alain M. Bernard, and Michel J. L. Gay, both of Fresnes, France, assignors to Office National D'Etudes Et De Recherches Aerospatiales, Chatillon, France

Filed Jan. 31, 1972, Ser. No. 222,255
Claims priority, application France, Feb. 2, 1971, 7103346
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 B **6 Claims**



An electrostatic accelerometer comprising a ball and casing and having a ball controlling device for each of the three orthogonal axes. Said accelerometer comprises for each axes a differential electric circuit for detecting the position of the ball and an electrostatic circuit for controlling the position of the ball having two pairs of coaxially secured electrodes whose internal surfaces facing the ball are located on the same sphere and are of equal area. With this structure, the cross effect of the electrostatic charge of the ball on the sensitivity of the accelerometer is cancelled.

3,742,768

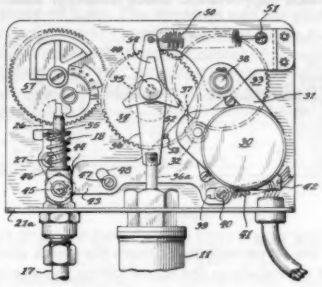
TIMING MOTOR DRIVE MECHANISM FOR WATER SOFTENER VALVES

Andrew J. Fleckenstein, 2880 Santa Marin Drive, Brookfield, Wis., and Herman C. Mitchell, 4159 S. 65th St., Greenfield, Wis.

Filed Mar. 2, 1972, Ser. No. 231,145
Int. Cl. G05g *17/00*
U.S. Cl. 74—3.52 **12 Claims**

A water softener valve timing mechanism utilizing a timing motor to shift the valve through the various operating and softening stages. A linkage is operated periodically to shift a drive

gear for the valve into engagement with a pinion of the timing motor. An adjustable cam controls a brine line valve for

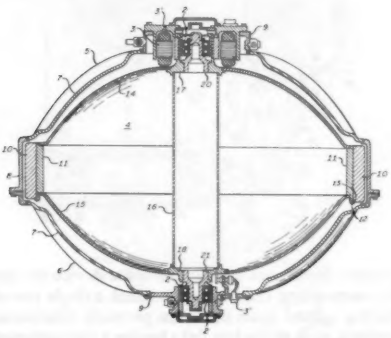


variably controlling the amount of water filled in the brine tank of the system to thereby control salt usage.

3,742,769
GYROSCOPE

James E. Crutcher, and Lawrence P. Davis, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,986
Int. Cl. G01c *19/00*
U.S. Cl. 74—5 R **19 Claims**



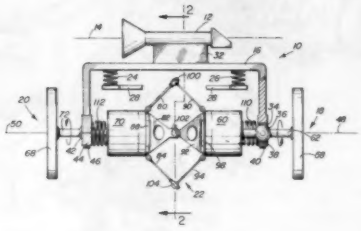
A gyroscopic rotor designed to increase the inertia to weight ratio and which may be defined as an inertial rim supported by two thin walled spherical shells. A thin walled hollow cylindrical shaft separates and supports the shells and provides axial rigidity to prevent oscillation or misalignment of the rim in respect to the axis of rotation.

3,742,770
GYROSCOPIC STABILIZER

William G. Flannelly, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Feb. 10, 1971, Ser. No. 114,310
Int. Cl. G01c *19/18*
U.S. Cl. 74—5.34 **21 Claims**

A gyroscopic stabilizing device employs two gyroscopes, each having a gyroscopic mass and a drive motor for rotating the mass about a spin axis to generate gyroscopic stabilizing moments. The gyroscopes are universally pivotally mounted on a support frame so that the spin axes of the gyroscopes may assume a generally aligned relationship in a stable or steady-state condition. A torque-transmitting coupling is connected between the two drive motors of the gyroscopes and reacts the driving torques of the drive motors against one another. The coupling also limits the precessional motions of the gyroscopes to motions of equal magnitude in opposite directions with respect to the support frame. With the precession motions so limited, gyroscopic moments generated by the masses in response to external moments are applied additively to the support frame and stabilize the frame about two

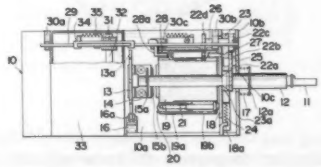


orthogonal axes normal to the spin axes. The gyroscopes may be biased toward positions in which the spin axes are aligned by providing springs between the gyroscopes and frame or between the gyroscopes themselves or by providing the torque-transmitting coupling connected between the two gyroscopes with resiliency of its own.

3,742,771
PRESET TUNING DEVICE FOR TELEVISION RECEIVER

Hitoshi Kitamura, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi-shi, Osaka-fu, Japan

Filed Jan. 18, 1972, Ser. No. 218,794
Claims priority, application Japan, Jan. 20, 1971, 46/1755; Aug. 2, 1971, 46/58090
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.6 **4 Claims**



A tuning device for a UHF tuner includes a rotatable drum rotatable step-by-stop by turning a tuning shaft of the tuning device, a plurality of adjustable control elements loosely carried by the rotatable drum and a tuner operating member for operating the tuner to select a desired one of UHF channels. The tuner operating member can be operated by the adjustment of any selected one of the control elements thereby permitting the tuning of the tuner.

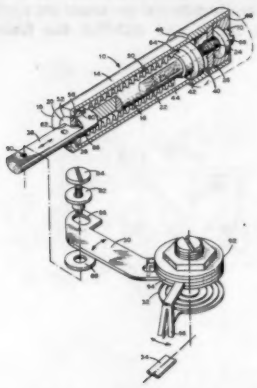
3,742,772
LINEAR MOTION ZERO ADJUSTER

Andrew M. Makovec, Livingston, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Aug. 12, 1971, Ser. No. 171,232
Int. Cl. F16j *15/52*
U.S. Cl. 74—18.2 **4 Claims**

A zero adjust mechanism includes a shaft member arranged for axial movement within a tubular housing, with one end of

said shaft extending out from one end of the housing and being adapted to be coupled to a meter movement. A bellows surrounds the portion of the shaft within the housing and a drive



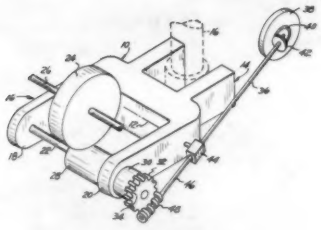
means is coupled to the other end of the shaft for imparting axial movement thereto in response to rotative movement of the drive means.

3,742,773

THICKNESS ADJUSTMENT MECHANISM FOR PRESS

Joseph E. Smith, Birmingham, and Georges D. DeTroyer, Grosse Ile, both of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Aug. 17, 1971, Ser. No. 172,471
Int. Cl. F16h *25/08*
U.S. Cl. 74—53 **5 Claims**



A mechanism to provide thickness adjustment for controlling the operation of a press ram. In a cam driven press, an eccentric roller is connected at the operator side of the treadle, while the ram is connected to the opposite treadle side. Responsive to the selective adjustment of the degree of eccentricity of the roller, the ram may be made to move either higher or lower.

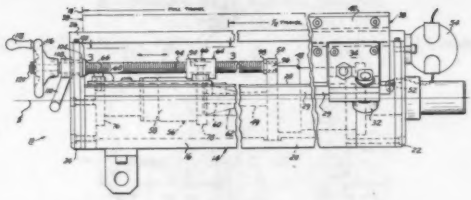
3,742,774

ADJUSTABLE STROKE RETRACTOR MECHANISM

Leland F. Blatt, 24121 Mound Road, Grosse Pointe Woods, Mich.

Filed Apr. 5, 1971, Ser. No. 131,335
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **4 Claims**

A retractor mechanism for an article handling apparatus is comprised of a longitudinal track assembly which supports a shuttle unit for reciprocating movement along the track externally thereof; the stroke of the shuttle unit is adjustable by means of a longitudinally displacable shock absorber assembly at one end of the track which is adapted to stop the travel of the shuttle unit and absorb the kinetic energy of the latter; the shock absorber assembly is adjustable by means externally of the track including a screw supported within the track at both ends for rotation and which carries an internally threaded member which supports the shock absorber assembly; upon



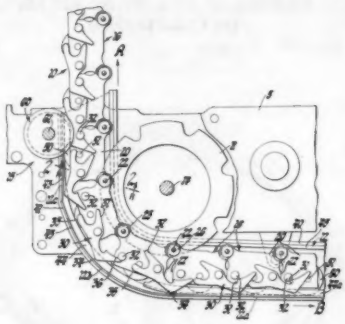
rotation of the screw within the track the shock absorber support will be moved along the screw taking the shock absorber with it in a direction towards the shuttle unit to thereby limit the travel of the shuttle unit.

3,742,775

STIFF BACK ROLLER CHAIN DEVICE

John R. Hayes, and George E. Collins, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1972, Ser. No. 228,686
Int. Cl. F16g *13/02*; F41f *9/00*
U.S. Cl. 74—245 R **7 Claims**



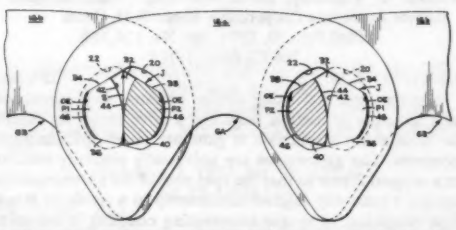
A sprocket driven stiff back roller chain device for use as a stowable ammunition rammer rod in which a single row of box links, having spaced apart links, are pivotally interconnected by pin-rollers, each of the box links having a cam actuated link latch lever pivotally mounted thereon and adapted to engage a pin on the next adjacent box link to releasably lock these box links together into a stiff rammer rod.

3,742,776

SILENT CHAIN WITH IMPROVED ROCKER JOINT

Stellios Antony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 20, 1971, Ser. No. 190,872
Int. Cl. F16g *13/02*
U.S. Cl. 74—251 S **6 Claims**



A silent chain of the rocker type has groups of links joined together at joints by pins extending through openings at the

ends of the links. At each joint one pin is wedged in the openings in one group of links and another pin, in rocking engagement with the first pin, is wedged in the openings in the adjacent group of links. The openings and the pins have complementary substantially straight wedging surfaces converging as they extend outwardly from the center of the openings. The aligned openings of two adjacent groups of links define a channel at each joint which is substantially filled by the two pins at that joint.

3,742,777

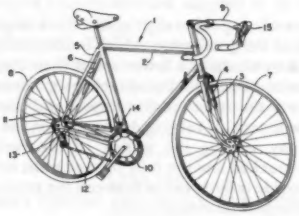
HYDRAULICALLY OPERATED SHIFT MECHANISM FOR BICYCLES AND THE LIKE

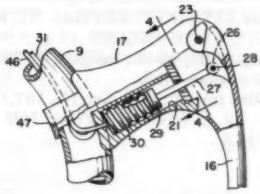
William R. Mathauser, P.O. Box 5, Sun Valley, Idaho

Continuation-in-part of Ser. No. 234,573, March 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,169, Sept. 16, 1971, abandoned. This application July 18, 1972, Ser. No. 272,985

Int. Cl. F16h *7/08*

U.S. Cl. 74—242.3 **21 Claims**





A hydraulically actuated shifting mechanism for bicycles and the like, wherein operating lever means is carried on the handlebar of the bicycle or the like and is operatively connected to operate a hydraulic master cylinder means for causing operation of a hydraulically operated slave cylinder means adjacent the sprocket of the bicycle for operating a derailleur mechanism to cause the chain of the bicycle to shift from one size sprocket to another size sprocket to change the gear ratio of the bicycle or the like.

3,742,778

ADJUSTABLE TEETH FOR GEAR SLIDABLY MOUNTED ON SPLINE SHAFT

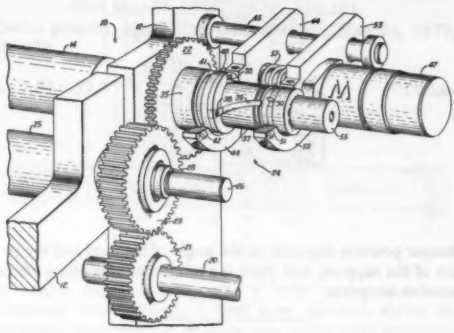
Charles K. Sedlak, Brookfield, Wis., assignor to Faustel, Inc., Butler, Wis.

Filed June 1, 1972, Ser. No. 258,819

Int. Cl. F16h *35/06, 55/18*

U.S. Cl. 74—395 **12 Claims**

A drive mechanism in a machine such as a printing press comprises a gear structure including a spline shaft on which a spur gear is mounted for axial movement. The spline shaft has straight or helical grooves on its exterior surface which are engaged by inwardly projecting teeth on the spur gear. The inwardly projecting teeth are adjustably movable with respect to the grooves to reduce or eliminate backlash.



3,742,779

SEGMENTED GEARING

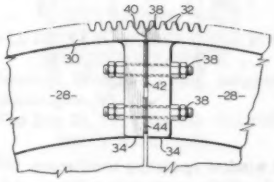
Marvin Bruce Shaver, Beaconsfield, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Sept. 3, 1971, Ser. No. 177,702

Claims priority, application Canada, Nov. 30, 1970, 99391

Int. Cl. F16h *55/12*

U.S. Cl. 74—448 **1 Claim**



Interchangeable and replacement segment gear portions are provided for incorporation into a segmented composite gear wheel, to facilitate construction, erection and transportation of the gear and to enable rapid repair to the gear wheel upon the occurrence of damage to one or more segments of the gear. Replacement segment gear portions are dimensionally relieved at their securing faces to permit precise matching of the adjoining teeth in operative relationship. The repair of very large gears may be readily effected using such replacement segments.

3,742,780

CAM FOLLOWER ARRANGEMENT

Paul Weston, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 23, 1971, Ser. No. 174,115

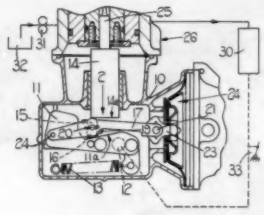
Claims priority, application Great Britain, Aug. 21, 1970, 40,276/70

Int. Cl. F16h *53/00*

U.S. Cl. 74—568 R **3 Claims**

A cam follower arrangement for use with an edge cam has a plunger slidable towards and away from the cam edge and a pair of rollers in mutual contact and respectively abutting the cam edge and the plunger end. The rollers are mounted in a

support which is itself movable in the plane of the cam edge transversely of the direction of movement of the plunger. The



plunger position depends on the angle of the cam and the position of the support, and there is a minimum of rubbing friction between the parts.

3,742,781

ELECTRIC WINDOW OPERATING MECHANISM

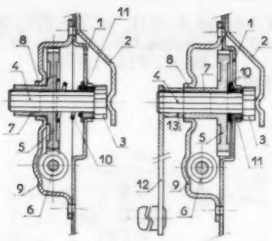
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle De Mecanismes, Courbevoie, France

Filed Oct. 1, 1971, Ser. No. 185,609

Claims priority, application France, Oct. 6, 1970, 7035954; Jan. 29, 1971, 7102945; Mar. 15, 1971, 7108858

Int. Cl. F16h *1/18*

U.S. Cl. 74—625 **11 Claims**



An electric window operating mechanism, for example for use on a road vehicle, comprises a worm and worm wheel speed reducer, the worm being connected to an electric drive motor, an operating axle of the mechanism extends through the worm wheel and a member is slideable along the axle by an auxiliary handle to de-clutch the speed reducer to enable the axle to be rotated and thus the window operated, by rotation of the handle in the event of breakdown of the electric drive, said member can be the worm wheel itself or can be separate therefrom.

3,742,782

INFINITE GEAR RATIO AUTOMATIC DRIVE TRANSMISSION

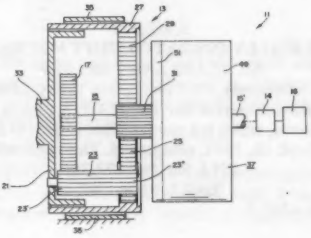
Wilbur R. Doran, Rt. 2, Kenton, Tenn.

Filed May 8, 1972, Ser. No. 251,010

Int. Cl. F16h *47/08*; B60k *21/00*

U.S. Cl. 74—688 **3 Claims**

The subject invention includes the usual planetary gear section, torque converter section, and a master fluid pump. However, the usual low and/or high drive clutch section is non-existent or is superseded by a drum section which includes, internally thereof, a plurality of gear pjmps and a bell gear. The drum section is rotatably mounted about the usual transmission input shaft. A metering valve is included for varying the amount of fluid allowed to flow from the master fluid pump to the gear pumps. Opening the meter valve is effective to inundate the gear pumps with fluid which impedes rotation or locks the gear pumps, thus causing the drum section to be carried or rotatably driven by the bell gear, i.e., the transmission output shaft now rotates in unison with the transmission input shaft or an essential 1:1 gear ratio is achieved. Virtually closing the metering valve starves the gear pumps of fluid which is effective to allow the drum section to respond to the rotation of the planetary gear section, i.e., the drum section revolves at the same speed as the transmission input shaft but in an opposite direction of rotation or a neutral condition is achieved.



Opening the metering valve slightly to a cracked position commences to load the gear pumps which is effective to cause the drum section to rotate at a lower speed than the input shaft, i.e., in opposite directions but establishing a maximum gear ratio between the transmission input and output shafts. Further impediment, of varying degrees, upon the gear pumps is achieved by varying the setting of the metering valve between the cracked and the fully opened positions. This is effective to provide infinite ratios between the revolutions of the transmission input and output shafts.

3,742,783

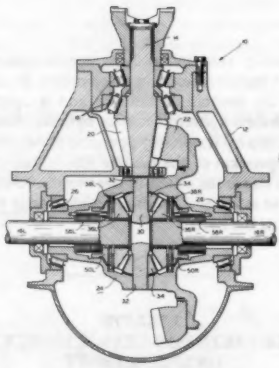
LIMITED-SLIP TYPE DIFFERENTIAL WITH ADJUSTING MEANS

Noah A. Shealy, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 29, 1971, Ser. No. 167,316

Int. Cl. F16h *1/44*; F16d *11/00*

U.S. Cl. 74—710.5 **14 Claims**



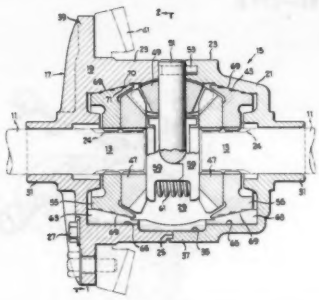
A differential of the limited-slip type has adjusting means for reducing the space within which the differential's frictional clutches are confined so that as the interleaved friction discs wear during service the width of this confining space may be adjustably reduced to maintain the side gears in proper position throughout the differential's life.

3,742,784

DIFFERENTIAL MECHANISM

Jack F. Engle, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 11, 1971, Ser. No. 170,863
Int. Cl. F16h *1/44*; F01m *11/02*
U.S. Cl. 74—710.5 6 Claims



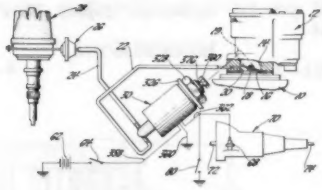
A cone shaped friction element adapted to be made from powdered metal technology and used in a limited slip differential is disclosed. The friction element has a spiralling lubrication groove along a conical surface thereof. The lubrication groove is formed so that the friction element may be easily removed from a die in which it is formed from powdered metal.

3,742,785

IGNITION TIMING AND THROTTLE POSITION CONTROL

Charles E. Buck, Anderson, Ind., and William F. Thornburgh, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1971, Ser. No. 170,772
Int. Cl. B60k *21/00*; F02d *31/00*; F02p *5/04*
U.S. Cl. 74—860 6 Claims



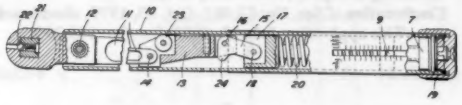
One coil of a solenoid unit is energized when the engine ignition system is on, and a second coil of the solenoid unit is energized when the ignition system is on and the transmission is in high drive ratio. The solenoid plunger is formed in two portions respectively responsive to energization of the two coils, and a lost motion connection is provided between the two portions. A valve carried on the solenoid plunger controls the vacuum conduit between the induction passage and the distributor vacuum advance unit to prevent vacuum advance during low drive ratio operation and to permit vacuum advance during high drive ratio operation. A carburetor throttle stop carried on the solenoid plunger prevents closure of the carburetor throttle beyond a fast idle position when the transmission is in high drive ratio, permits closure of the carburetor throttle to an intermediate idle position when the transmission is in low drive ratio, and permits closure of the carburetor throttle to a slow idle nearly closed position preventing dieseling when the ignition system is off.

3,742,786

TORQUE SPANNERS

Harry Wolfgang Krain, Reading, England, assignor to Precision Engineering Company Limited, Reading, England

Filed May 24, 1971, Ser. No. 146,101
Claims priority, application Great Britain, May 26, 1970, 25,271/70
Int. Cl. B25b *13/00*
U.S. Cl. 81—52.5 7 Claims



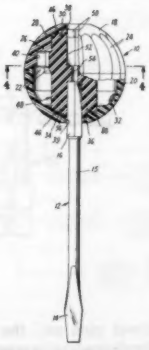
A torque spanner comprises: a body having a tubular passageway therethrough; a first lever pivoted within the passageway intermediate its ends, one of its ends projecting from the passageway which end is arranged to apply torque or carry torque applying means of which the torque reaction tends to rotate the lever about its pivot; a bell-crank lever within the passageway, one arm of the bell-crank lever being pivotally connected to the other arm of the first lever, the fulcrum of the bell-crank lever abutting the wall of the passageway for rocking and sliding or rolling movement thereon; and spring means acting on the other arm of the bell-crank lever to bias the bell-crank lever into one position, the arrangement being such that application of a preset torque to the said one end of the first lever causes the first lever to rotate and pivot the bell-crank lever out of its one position against the action of the spring means, and thus causes part of the bell-crank lever, or a striker connected thereto, to strike the wall of the passageway to give an audible indication that the preset toreque has been reached.

3,742,787

REVERSIBLE DRIVE RATCHET HAND TOOL WITH SPHERICAL HANDLE

Carlton L. Whiteford, Westport, Conn., assignor to Creative Tools, Inc., Bennington, Vt.

Filed July 26, 1971, Ser. No. 165,482
Int. Cl. B25b *13/46*
U.S. Cl. 81—61 8 Claims



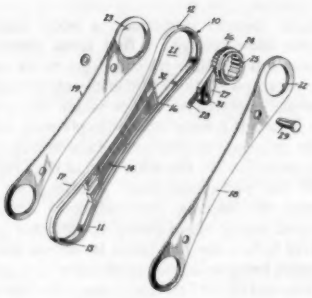
A hand tool employs a generally spherical handle with a housing and a drive member seated therewithin for engagement of a tool member for positive drive action in one direction. One-way clutch means within the housing permits relative rotation of the drive member in a first direction and interengagement for joint movement in the direction opposite thereto. The tool member or bit may be engaged in either of two apertures extending inwardly from opposite ends of the

drive member to enable reversal of the directions of free and joint movement, and the tool is comfortable and effective to employ by virtue of the configuration of its handle allowing the palm to seat it firmly for exerting the axial force on the tool member.

3,742,788
RATCHET WRENCH

Edward D. Priest, Southboro, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Continuation of Ser. No. 83,463, Oct. 23, 1970, abandoned.
This application July 20, 1972, Ser. No. 273,399
Int. Cl. B25b *13/46*
U.S. Cl. 81—61 **4 Claims**

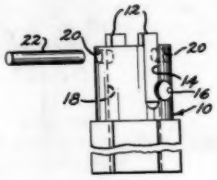


This invention relates to a ratchet wrench and, more particularly, to a double-ended wrench having ratchet-operated sockets of different sizes at the ends and having a main body formed of injection molded plastic.

3,742,789
WRENCH

Gerald R. Rusk, and Robert E. Koch, both of Toledo, Ohio, assignors to The Freeman Supply Company, Toledo, Ohio

Filed July 15, 1971, Ser. No. 162,856
Int. Cl. B25b *13/56*
U.S. Cl. 81—90 C **5 Claims**

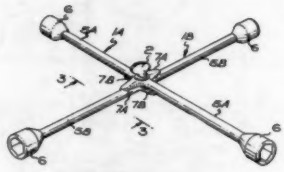


A wrench for dowel pins and the like formed from bar stock. Longitudinally extending grooves are formed in the external surface of the bar stock so as to communicate with one of its ends, and pieces of key stock are placed in the grooves so as to project from the end of the bar stock for use as tangs. Where the wrench is to be used for applying torque to dowel pins, the bar stock will be provided with an axially extending opening communicating with said one end, and will preferably also include a pair of laterally aligned openings through the walls on opposite sides of the axially extending opening.

3,742,790
WHEEL-BRACES

Gerald Jack Galley, Sheffield, England, assignor to Sheffield Steel Products Limited, Sheffield, England

Filed May 4, 1972, Ser. No. 250,356
Claims priority, application Great Britain, Nov. 13, 1971, 52,807/71
Int. Cl. B25b *13/00*
U.S. Cl. 81—177 E **4 Claims**

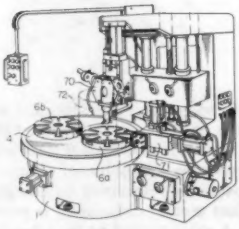


A wheel-brace of the type having four arms comprises a pair of members pivoted to each other at their middle so as to provide two arms each, lateral projections at the middle of each member adapted to lie against the arms of the other member when the members are in operative position, a screw forming the pivot and enabling the members to be urged together when in operative position, and concave faces on the lateral projections to embrace the arms of the respective member when the members are in operative position or complementary recesses and projections between the lateral projections and the arms fitting together when the members are in operative position, to prevent relative rotation between the two members at the pivot, but permitting collapsing of the wheel-brace for storage, packing, and transport, by slackening the screw forming the pivot.

3,742,791
LATHE

Kenji Sato, Ishikawa-ken, Japan, assignor to Yoshizo Kitano, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 15, 1971, Ser. No. 124,392
Claims priority, application Japan, Mar. 19, 1970, 45/22664
Int. Cl. B23b *3/10*
U.S. Cl. 82—2 D **8 Claims**

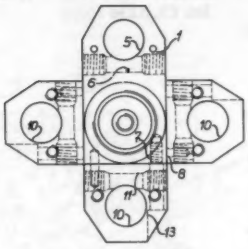


A lathe having multiple face plates disposed on a turn table at constant center angular intervals about the axial center of the turn table with at least one of them being in a cutting station and the remaining face plates being in stand-by stations for replacement of a cut work or works with a new work or works, which turn table turns by a prescribed turning angle so as to bring the new work upholding face plate or plates into the cutting station when one cycle cutting operation is completed.

3,742,792
MULTIPLE-TOOL TOOL HOLDER

Charles Willen, Villeneuve, Switzerland, assignor to Charles Willen & Cie, Villeneuve, Switzerland

Filed July 14, 1971, Ser. No. 162,492
Claims priority, application Switzerland, Sept. 4, 1970, 13281/70
Int. Cl. B23b 29/26
U.S. Cl. 82—36 R 7 Claims

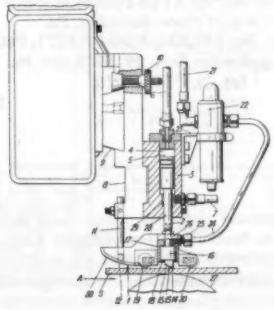


This tool holder notably for turret lathes is of the multiple block type and permits modification of the geometry of the tool holder body according to the number of chisels or other tools required for a given machining operation. It comprises a carrier block having a integral shank for securing same to the turret and at least one additional block detachably secured to said carrier block.

3,742,793
APPARATUS FOR SCORING SHEET MATERIAL

John McCutcheon Gray, Prescot; Jerzy Pionke, Liverpool, both of England, and Edwin Johnson, Ajax, Ontario, Canada, assignors to Pilkington Brothers Limited, Liverpool, England

Filed July 2, 1971, Ser. No. 159,124
Claims priority, application Great Britain, July 10, 1970, 33,645/70
Int. Cl. B26d 3/08
U.S. Cl. 83—8 10 Claims

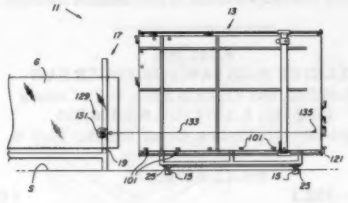


A cutter assembly for scoring a score line in a surface of sheet material, is connected to the piston of a double-acting pneumatic cylinder and piston operable to urge the cutter assembly towards the surface to be scored.

3,742,794
GLASS HANDLING AND CUTTING SYSTEM

Charles F. Rupprecht, and Frank Wiker, both of Memphis, Tenn., assignors to Binswanger Glass Co., Richmond, Va. and Charles F. Rupprecht, Memphis, Tenn.

Division of Ser. No. 70,121, Sept. 8, 1970, Pat. No. 3,668,955.
This application Feb. 10, 1972, Ser. No. 225,091
Int. Cl. B26d 3/08
U.S. Cl. 83—12 4 Claims

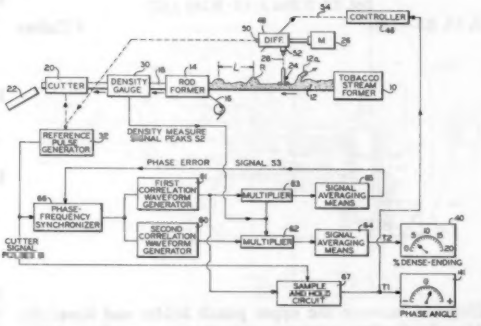


A system for handling plate glass and for cutting same. The system includes a self-propelled apparatus on tracks movable to positions adjacent selected bins, containing the substantially vertically disposed glass, located adjacent the tracks. The apparatus includes a tiltable top assembly for tilting to a substantially vertical loading position for loading the glass from the selected bin, and includes power-actuated retrieving means for attachment to the glass to pull the glass from the bin to the top assembly. After loading, the top assembly is moved into a horizontal position. The apparatus includes means for scoring the glass by a single operator shoving a carriage means across a bridge means to the other side of the apparatus where there is located bumper means for returning the carriage means to the operator's side of the top assembly and trip means for disengaging the cutter means from the glass.

3,742,795
CIGARETTE DENSE END MONITORING AND CONTROLLING APPARATUS

Jesse B. Lipcon, and James N. Horn, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Mar. 15, 1972, Ser. No. 234,767
Int. Cl. A24c 5/32
U.S. Cl. 83—13 21 Claims



A dense-end monitor and controller is provided for a cigarette-making machine of the dense-ending type. In a preferred embodiment, a density gauge is positioned adjacent to the moving cigarette rod for providing a first signal varying with the occurrences of dense portions in the tobacco rod. Another signal is supplied for each cutting action of the rod cutter by means synchronized to the rod cutter. Correlation waveform generators generate sawtooth and triangular-

shaped waveforms which are phase-synchronized with the dense portion pulses in the density gauge signal. Two output signals, one representing deviation of the dense portions from their proper position at the ends of the cut cigarettes, and the other representing the relative increase in the amount of tobacco in the dense portions, are provided for visual display and machine control purposes. The signals are obtained by correlating the density signal with the triangular-shaped waveform and by sampling the sawtooth-shaped waveform at the instant the cutter signal is generated. The output signals are free of any interdependence of information content.

3,742,796

CLUSTER BOSS SAW FOR EDGER SAW

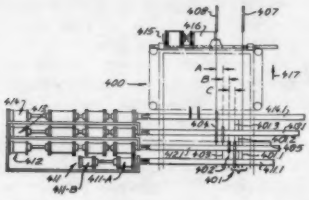
James R. McMillan, Box 17, Lone Butte, B.C., Canada

Filed May 6, 1971, Ser. No. 140,936

Claims priority, application Great Britain, May 6, 1970, 21,703/70

Int. Cl. B27b *5/34*

U.S. Cl. 83—102.1 **4 Claims**



Gang saw for edger having boss saw which is a cluster of two or more circular saws at fixed spacing. Boss saw is mounted on rotatable shaft with additional saw, saws being independently slidable along shaft. Movable diverter can be aligned with selected saw of cluster so that cluster itself can be used alone as gang saw to produce lumber of fixed width. Fast conversion to gang saw to produce lumber of different width from that produced by cluster.

3,742,797

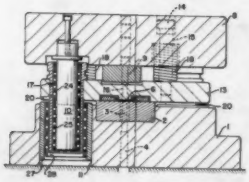
DIE SET WITH STRIPPER PLATE

John C. Vecchi, Natrona Heights, Pa., assignor to Oberg Manufacturing Co., Inc., Freeport, Pa.

Filed June 14, 1971, Ser. No. 152,821

Int. Cl. B26d *7/18*; B26f *1/02*

U.S. Cl. 83—140 **4 Claims**



Disposed between the upper punch holder and lower die holder of a die set is a stripper plate that is movable vertically relative to both holders. The plate is suspended from the punch holder and between them there are springs that resist movement of the plate and punch holder toward each other when the plate is pressed against the work being punched. Guide posts rigidly mounted in the punch holder extend down through guide passages in the stripper plate and into vertical passages in the die holder. A bearing sleeve is mounted on each guide post for vertical movement thereon and extends through the adjoining stripper plate passage and down along the post. A bushing encircling this sleeve, which it engages, fits in a bearing sleeve mounted in an underlying passage in the die holder. The upper ends of the bushings are rigidly connected to the stripper plate. The bushings hold the stripper plate against tilting relative to the punch and die holders.

3,742,798

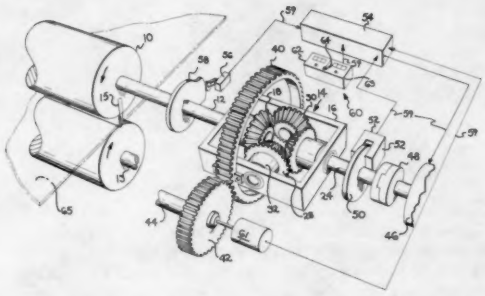
CORRUGATED SHEET CUTOFF LENGTH ADJUSTMENT APPARATUS

Richard J. Gries, Toledo, Ohio, assignor to Owens-Illinois, Toledo, Ohio

Filed Oct. 21, 1971, Ser. No. 191,429

Int. Cl. B23d *25/12*

U.S. Cl. 83—298 **8 Claims**



Apparatus for making immediate running changes in the length of sheet cut from a continuous web of newly manufactured corrugated paperboard. A corrugated cutoff knife is driven by the output shaft of a bevel gear differential. A differential cage is driven through a line shaft operating at the same speed as the running speed of the corrugated board. The cutting knife is driven at the speed of the board during the cutting stroke. However, the speed of rotation during non-cutting periods is retarded to allow a specific length of board to pass under the knife. The input shaft to the differential is driven during such periods to retard the speed of the cutting knife. A pulse counter is preset to allow the input gear to be driven only long enough to allow the desired amount of corrugated board to pass before making the next cutting stroke. A control panel is set with a next pre-selected length of sheet to be cut, and by merely switching from the present length to a new length, the counter is reprogrammed and a new length of sheet will be delivered at once.

3,742,799

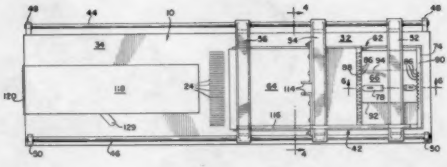
METHOD AND APPARATUS FOR SLICING FURS

Fred L. Olday, 505 Bogart Place, Scranton, Pa.

Division of Ser. No. 138,536, April 29, 1971, Pat. No. 3,710,662. This application Sept. 29, 1972, Ser. No. 293,410

Int. Cl. C14b *15/10*

U.S. Cl. 83—431 **11 Claims**

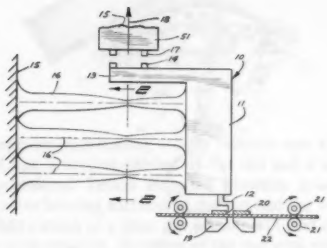


A fur pelt slicing method and apparatus in which a pelt, held against a feed table surface by a bank of pins, is fed through a series of slitting knives rotating in the direction of pelt feed so that preselected portions of the pelt are left uncut. Also, the disclosure includes an out-feed table discharge portion by which transfer of the slit pelt to a retaining board is facilitated.

3,742,800
CONSTANT FLEXURE STRESS ENERGY STORING BEAM

Darrell A. Frohrib, St. Paul, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 53,538, July 9, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,740
Int. Cl. B26d 5/06, 5/08; B26f 1/02
U.S. Cl. 83—587 6 Claims

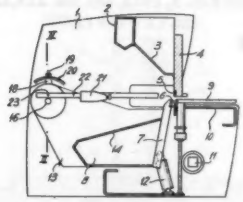


A flexural energy storing beam for use with punching and printing hammers in computers and high speed data processors, said beam having a contour optimized according to the energy input whereby in the bending of the beam the maximum principal stress is constant at every cross section of the beam.

3,742,801
SHEARING MACHINE

Paul Cailloux, Le Perreux, France, assignor to Promecam Sisson-Lehmann, Saint-Denis, France

Filed Nov. 9, 1971, Ser. No. 196,959
Claims priority, application France, Nov. 13, 1970, 7040579
Int. Cl. B26d 5/02, 7/16
U.S. Cl. 83—391 3 Claims

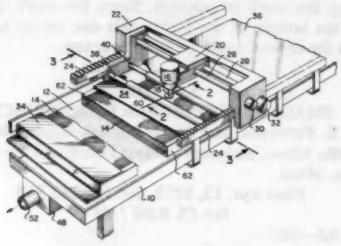


Hydraulic sheet-metal shearing machine comprising a movable apron pivotally mounted about an eccentric axis of rotation of adjustable angular position permitting of modifying at will the initial clearance between the blades. The support of the sheet abutment device is hingedly mounted to the movable apron about an axis shifted in relation to the pivotal axis thereof, and which has likewise an eccentric position. The shafts materializing these two axes are operatively interconnected through means capable of correcting the position of said abutment device when the clearance between the blades is modified by pivoting the eccentric hinge shaft of said movable apron.

3,742,802
SHEET MATERIAL CUTTING APPARATUS INCLUDING A VACUUM HOLDDOWN SYSTEM HAVING A ROLLER MECHANISM FOR HANDLING AIR-IMPERMEABLE SHEETS

Robert J. Maerz, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Apr. 6, 1972, Ser. No. 241,643
Int. Cl. B26d 7/02
U.S. Cl. 83—451 11 Claims

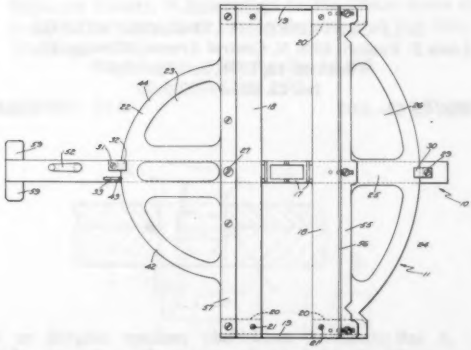


A sheet material cutting apparatus of the type wherein a layup of sheet material is spread onto the supporting surface of a cutting table and held to the cutting table in a compressed condition by vacuum applied to an overlying sheet or panel of air-impervious material includes a roller mechanism for handling the air-impervious panel whereby such a panel is removed from the layup at the cutting zone so as not to be cut by the cutting tool. The roller mechanism includes two rollers located on opposite sides of the cutting tool with the air-impervious panel comprising two sheets each partially rolled onto a respective one of the two rollers.

3,742,803
MITER ATTACHMENT FOR A POWER SAW

Joseph P. Allaire, 228 N.E. 22 Avenue, No. 4, Pompano Beach, Fla.

Filed Sept. 28, 1971, Ser. No. 184,436
Int. Cl. B27b 5/20
U.S. Cl. 83—471.3 11 Claims



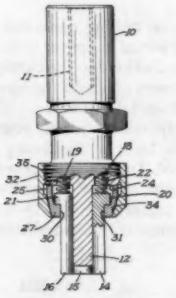
The device comprises a miter attachment for a power saw. An elongated base is formed of extruded aluminum stock to form a hollow housing of rectangular cross section. An intermediate portion of the base is provided with the standard miter cuts, 45° and 90° vertically and horizontally. The support for the power saw comprises a frame formed of spaced parallel supporting strips connected at their ends and pivotally mounted on the base so that the angular cuts fall between the strips. The outer edges of the strips are provided with integral semicircular guide plates. The base is provided with guide

members which form slots for the edge of each plate to guide the frame in its pivotal movement. A small wedge shaped member is vertically slidably mounted in the housing and resiliently retained in the down position by a coil spring. The wedge member is located adjacent the outer perimeter of one of the guide plates so that when the wedge is raised, it is out of contact with the plate, but when the wedge is lowered by the spring, it engages the edge of the plate to hold it in position. Notches may be provided in the plate for locking the wedge at the 45° or 90° angles. A clamp is also mounted in the housing and provided with pivoted members beneath the frame for clamping the work in position. Since the work is clamped against the bottom of the frame, this also serves to hold the frame at the desired angle for the power saw.

3,742,804
SMALL STATION SHEAR PROOF PUNCH

Clinton E. Patterson, and Richard J. Schweiger, both of Minneapolis, Minn., assignors to Mate Punch and Die Company, Anoka, Minn.

Filed Apr. 13, 1972, Ser. No. 243,565
Int. Cl. B26f *1/14*
U.S. Cl. 83—637 **3 Claims**

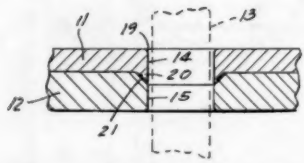


A shear proof punch with the heels aligned and held in place by a combination of an outer securing ring threaded onto the punch and structure within the outer securing ring that engages the heels and sides of the punch tip to hold them aligned with each other and also limits the outward movement of the heels.

3,742,805
SELF-CONTAINED, MULTI-BLADE PACKAGE

Louis F. Ranieri, 4036 N. Central Avenue, Chicago, Ill.

Filed Oct. 12, 1970, Ser. No. 79,947
Int. Cl. B26d *1/00, 5/08*
U.S. Cl. 83—662 **7 Claims**

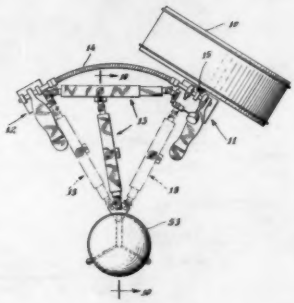


A self-contained, multi-blade package adapted to be mounted in the blade head assembly of a wafering machine comprises a plurality of substantially coextensive elongated thin flat strip blades having aligned holes in the opposite end portions thereof with spacer plates between the end portions of the blades and having holes aligned with the blade holes, and the assembly connected together by rods extending through the aligned holes and having means at the opposite ends of the rods to retain the blades and spacers assembled on the rods so that the assembly can be handled as a self-contained package for placement in and removal from the blade head assembly.

3,742,806
APPARATUS FOR USE IN PLAYING PECUSSION INSTRUMENTS

Richard D. Zalmer, 91 Old Ansonia Road, Seymour, Conn.

Filed May 20, 1970, Ser. No. 39,073
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 **14 Claims**



A foot operated playing device for musical percussion instruments in which the foot pedal is remotely and adjustably spaced from a beater at the instrument such as a bass drum. The player's desired rhythm applied to the remotely located pedal is accurately and precisely transmitted from the foot pedal to the beater through a flexible shaft in the form of concentric helical coils. The device may be used also in combination with another pedal and beater disposed at the instrument. A sub-combination includes a removable adjustable spacer connector which not only can be used with the instant playing device, but may be used to adjustably secure various instruments and their accessories in spaced relation to each other. The entire apparatus is generally collapsible for transportation and storage.

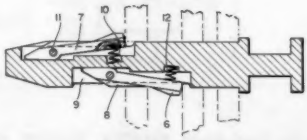
ERRRATUM

For Class 84—422 see:
Patent No. 3,742,810

3,742,807
LEVELING AND LOCKING PIN

Dan Manning, 2259 State Road 444, Deltona, Fla.

Filed Feb. 3, 1972, Ser. No. 223,329
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 R **1 Claim**



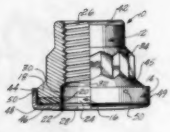
A self-locking and leveling pin having a body portion and a handle-like leveling-head depending from one end of said body portion and locking members disposed on opposite sides of said body portion and longitudinally spaced-apart along the length of said body portion; said pin is used to provide temporary fastening and leveling means for holding in registered alignment the bolt holes of successive heavy metal structural elements, e.g., prefabricated beams, angles, fastening members and sheets.

3,742,808

COMPOSITE, SELF-SEALING FEMALE FASTENER

William Harvey Trembley, Granada Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed Nov. 23, 1970, Ser. No. 91,728
Int. Cl. F16b *37/00*
U.S. Cl. 85—32 R 17 Claims



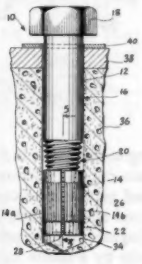
A composite, self-sealing female fastener has an internally threaded nut, a washer carried by the nut and a seal of compacted powdered Teflon disposed between axially spaced-apart interior bearing surfaces of the nut and the washer. During the fabrication of a joint the washer will seat on the sheet to cause such rotation. Rotation of the nut with respect to the washer and axial movement of the nut towards the washer produces inward extrusion of seal material to fill interior voids in the nut and cooperating joint components and removes essentially all of the seal material from between the two bearing surfaces. In the event that in any given joint not all of the seal material is required to fill interior voids, excess seal material will extrude longitudinally between a skirt of the washer and the base of the nut and will be divided into segments by dimples in the skirt. An annular, conical protrusion of the washer provides a barrier against seal material entering between the washer and the surface of the sheet of the joint. An embodiment provides a torque-off wrenching member on the nut calibrated to effect a predetermined joint preload with an applied torque sufficient to separate the wrenching member from the nut.

3,742,809

EXPANSION ANCHOR WITH CONICALLY TAPERED AND THREADED INTERACTING PARTS

Kenneth B. Zifferer, c/o U.S. Expansion Bolt Company, 500 State St., York, Pa.

Filed Aug. 4, 1971, Ser. No. 168,809
Int. Cl. F16b *13/06*
U.S. Cl. 85—84 9 Claims



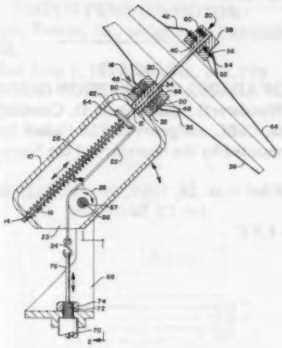
An expansion anchor comprising (a) a bolt having at one end a conically tapered and threaded end portion and, at its opposite end, means for engagement with a torque tool and a workpiece, and (b) an internally conically tapered and threaded expansion sleeve which engages said conically tapered and threaded end portion of the bolt. The outer diameter of the expansion sleeve corresponds substantially to the diameter of the bolt.

3,742,810

ANGULARLY ADJUSTABLE CYMBAL MOUNTING

Ralph Dean Crigger, R.F.D. 3, Johnson City, Tenn.

Filed Oct. 27, 1972, Ser. No. 301,500
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 6 Claims



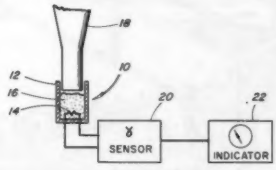
An angularly adjustable cymbal mounting head is provided for detachable connection to the upper portion of a treadle operated cymbal stand, the head comprising a body having forward bearing means and rearward bearing means adapted to slidably receive shaft means, means on said body for affixing a first cymbal to the forward portion thereof, said shaft means being adapted to extend through and beyond said first cymbal and being provided with means to affix a second cymbal thereto for movement therewith relative to said body and first cymbal, linkage means connected to said shaft means, mounting means angularly adjustably attached to said body for affixing said body to the upper portion of a treadle operated cymbal stand, and connecting means on said linkage means for attaching said linkage means to the treadle shaft of a cymbal stand.

3,742,811

APPARATUS FOR CONTROLLING THE FABRICATION OF ELECTROEXPLOSIVE DEVICES

Irving Kabik, Silver Spring, Md., and Louis A. Rosenthal, Middlesex County, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1970, Ser. No. 63,378
Int. Cl. C06d *1/08*
U.S. Cl. 86—20 R 6 Claims



A method and apparatus for controlling the fabrication of electroexplosive devices. An electroexplosive device is loaded with an explosive by pressure loading or ignition drop or other techniques, the explosive surrounding an electroexplosive bridge-wire located within the device. A self-balancing bridge is connected to the bridgewire to monitor the bridgewire thermal conductance during loading. In one embodiment of the invention, an indicator is connected to the self-balancing bridge to display the variation in thermal conductance providing an indication of the thermal contact between the explosive and

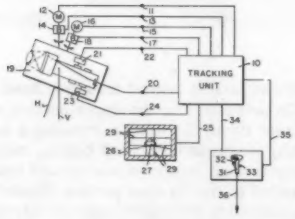
the bridgewire. In an alternative embodiment, the output of the self-balancing bridge is coupled to a comparator which compares the bridgewire thermal conductance to a desired value. The output of the comparator is an error signal which is amplified in an amplifier connected thereto, the amplified error signal being coupled to a control device to control the loading of the electroexplosive device and provide consistent and improved thermal contact between the explosive and the bridgewire.

3,742,812

METHOD OF AIMING A TELEVISION GUIDED MISSILE

William H. Woodworth, and Robert D. Cunningham, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1969, Ser. No. 812,566
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 E **2 Claims**



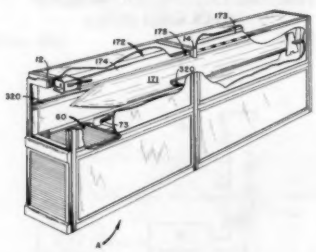
A method of aiming a gyrostabilized television guided missile system from the air at a ground target wherein the missile is boresighted prior to launch. At launch time the pilot places the desired target within the gunsight of his aircraft, confirms in his cockpit monitor that the target is indeed within the tracking gate of the missile, then launches the missile.

3,742,813

MISSILE LAUNCHER

Sverre Kongelbeck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 14, 1970, Ser. No. 97,686
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.807 **40 Claims**



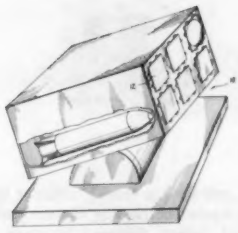
A missile launcher of elongated rectangular, box-like, contour is provided, so that either a single unit, or cell, may be deployed or a plurality of them may be arranged as a battery. The launcher will accept a missile having folded fins which erect automatically as the missile leaves the launcher. Provision is made for preventing the missile from leaving the launcher in the event of accidental rocket ignition, and for preventing collision of the aft end of the missile with the forward rail of the launcher during a launching. Unique door structure and an effective safety an arming mechanism are also provided.

3,742,814

FRANGIBLE COVER ASSEMBLY FOR MISSILE LAUNCHERS

Uriah B. Kroh, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 6, 1971, Ser. No. 159,895
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **8 Claims**



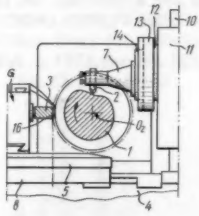
A frangible cover assembly for closing the opening of a guide cell for a missile launcher including a cover molded in substantially the same shape as the opening and formed of a rigid plastic such as polyurethane and a frame member comprising a plurality of interconnected side members adapted to overlie the cover and fasten it to the cell guide. The frame member is provided with a heating element on the inner surfaces of the side members which contact the cover when in position, thereby preventing ice from forming on the cover.

3,742,815

METHOD OF MACHINING GROOVES IN ROLLS OF HOT PILGER MILLS

Ivan Alexeevich Sukhov, Pudozhskaya ulitsa, 4a, kv. 22, and Igor Nikolaevich Soloviev, ulitsa Stolkosti, 2/11, kv. 227, both of Leningrad, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,186
Claims priority, application U.S.S.R., Oct. 18, 1969, 1374899; Oct. 18, 1969, 1374903
Int. Cl. B23c *1/04*, *1/12*, *1/18*, *3/34*
U.S. Cl. 90—11 C **2 Claims**

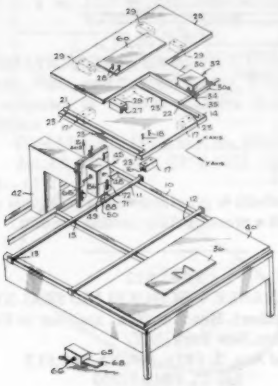


While the roll being machined is in a rotary feed movement, and its groove arcuate central portion is machined by a tool rotated around a fixed geometrical center of the arc defining the central portion and subsequently receiving a radial feed, the bevel flanks conjugate with the profile central portion are machined alternatively by a shank cutter which is rotated in the groove radial section plane and simultaneously moved in the radial direction until the bevel flank being machined conjugates with the arc of the groove central portion. For this purpose, a slide housing the revolving table operatively associated with the roll drive and carrying guideways with a cutter head and a cutter mounted therein is arranged on the bed at its one side with respect to the means the for accommodation of the roll being machined, and a post having vertical guideways with a means for clamping the tool holder mounted therein is arranged at the other opposite side of the bed.

3,742,816
CARVING AND ENGRAVING MACHINE

Edward L. Carnahan, 645 N. Ardmore Avenue, Apt. 102, Los Angeles, Calif.

Filed Oct. 2, 1970, Ser. No. 77,541
Int. Cl. B23c *1/16*; B43l *13/10*
U.S. Cl. 90—13.1 8 Claims

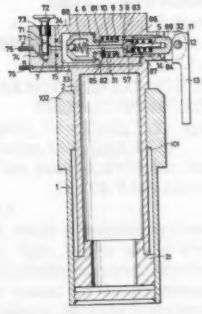


A carving and engraving machine is disclosed. The machine includes a work table on which a workpiece into which a pattern is to be carved is clamped. The work table is manually movable in a fixed plane in a pattern corresponding to a master pattern which is followed by a manually biasable stylus at a 1:1 ratio. A foot actuated hydraulic system is used to drive a cutting tool into the moving workpiece to an accurate depth, controlled by the setting of a novel motor assembly. The latter facilitates stroke length control and compensation for different material thicknesses carvable with different length cutting tools.

3,742,817
HYDRAULIC LIFTING JACKS

Jorg Wenzel, Freudenberg/Main-Kirschfurt, and Hans Rieschel, Miltenberg/Main, both of Germany, assignors to Josef Haamann, Freudenberger Winden-Und Hebezeugfabrik, Main-Kirschfurt, Germany

Filed May 7, 1971, Ser. No. 141,146
Claims priority, application Germany, May 8, 1970, P 20 22 514.3
Int. Cl. F15b *11/08*
U.S. Cl. 91—444 3 Claims

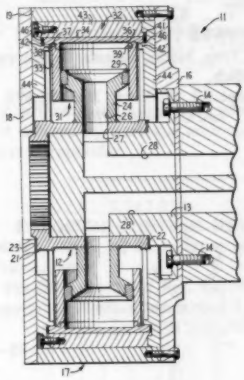


A hydraulically operated telescopic lifting jack comprises a piston carrying a ram-head which houses a non-return valve, a pressure relief valve and a fluid-release valve. The fluid release valve includes a slide member carrying a valve member and mounted in a guide. A portion of the slide member is of reduced diameter in relation to the guide and defines therewith a chamber which communicates with a fluid feed connection.

3,742,818
PISTON AND RETAINING ASSEMBLIES FOR A RADIAL PISTON PUMP OR MOTOR

William K. Engel, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 1, 1971, Ser. No. 148,779
Int. Cl. F01b *1/100*, *13/04*
U.S. Cl. 91—490 5 Claims

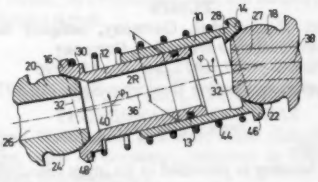


An improved radial piston pump or motor of the type wherein a rotor is rotatably mounted upon a pintle valve spindle eccentrically fixed within a cylindrical race, the rotor having hollow radial spokes communicated with passages of the pintle valve and reciprocably mounting hollow pistons thereon having shoes riding against the inside of the race. Each piston is of unique two-part construction preferably including a bronze shoe such that the race against which it rides may be advantageously of steel. In addition, the shoe of each piston is preferably provided with a flange which rides upon retaining protrusions of the race.

3,742,819
TELESCOPIC PISTON-CYLINDER ASSEMBLY FOR HYDRAULIC MACHINES AND MACHINE COMPONENTS

Lennart Werner Freese, Stockholm, Sweden, assignor to New-Inuent S.A., Geneva, Switzerland

Filed Feb. 12, 1971, Ser. No. 114,935
Claims priority, application Sweden, Feb. 20, 1970, 2183/70
Int. Cl. F01b *1/00*
U.S. Cl. 91—490 7 Claims



A piston-cylinder assembly is provided, comprising two interengaging sleeve members telescopically extendable and contractable. The assembly has at either end an internal frusto-conical sealing surface for pivotally engaging a seat having a convex spherical surface, the contact line between the conical sleeve end and the spherical seat thus being a cir-

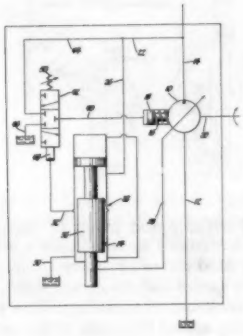
cle. The assembly is intended to be operated by a pressure fluid, primarily hydraulic and of a pressure of 5,000–6,000 psig. The tremendous operative force developed is automatically exactly centered between the two spherical seats, in any relative position thereof, without subjecting the sleeve members to tilting moments. By keeping the contact line diameter very close to the diameter of the effective pressure area of the assembly the seating forces are low, and therefore the friction developed during the relative pivot movements between the sleeve members and the seats is low, and yet the sealing is perfect.

3,742,820

POWER TRANSMISSION

Kurt R. Lonnemo, Troy, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Sept. 22, 1971, Ser. No. 182,675
Int. Cl. F04b *49/00*
U.S. Cl. 91—497 **3 Claims**



A displacement adjusting system for a variable displacement pump which delivers in a single direction only utilizes a pair of laminar flow restrictions connected in series in a bleed circuit and operated mechanically by the displacement regulator of the pump to increase one restriction as the other is decreased in proportion to changes in pump displacement. The pressure level at the point between the two restrictors is applied against a variable spring bias on a pilot valve to control a servomotor acting on the pump displacement regulator. The control maintains a maximum on pump input torque under all load variations and this limit is adjustable through the pilot valve spring.

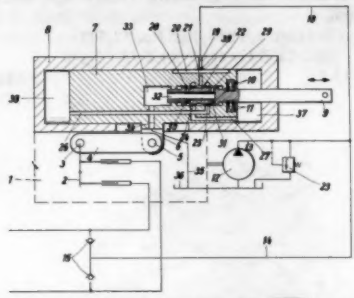
3,742,821

ARRANGEMENT FOR CONTROLLING REGULATABLE PUMPS

Georg Martin, Harsewinkel, Germany, assignor to Gebr. Claas, Harsewinkel uber Gutersloh, Germany

Filed Sept. 27, 1971, Ser. No. 184,095
Claims priority, application Germany, Sept. 30, 1970, P 20 47 977.0
Int. Cl. F0b *3/00*
U.S. Cl. 91—506 **5 Claims**

A cylinder housing is provided in its inner circumferential surface with a groove, and a control piston is slidable in the housing to opposite sides of a center position and is provided with a pair of axially saced grooves in its outer periphery which, when the piston is in center position, are located at opposite axial sides of the groove in the inner surface of the cylinder housing. A side member is guided in a stepped bore of the piston for axial sliding movement relative thereto and defines with the piston two pressure chambers each of which communicates with one of the outer grooves of the piston, and



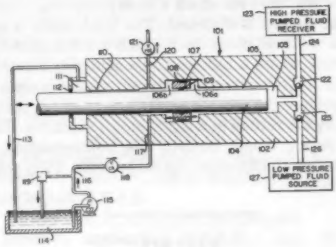
each of the chambers is provided with a relatively small port connecting it with a pressure fluid venting conduit.

3,742,822

CLOSE CLEARANCE VISCOUS FLUID SEAL SYSTEM

Wayne Mason Talbert, Houston, Tex., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 3, 1971, Ser. No. 168,613
Int. Cl. F01b *31/00*
U.S. Cl. 92—86 **5 Claims**



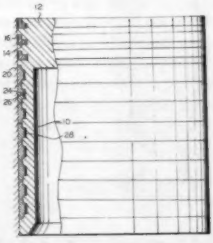
A close clearance viscous fluid seal system has been developed for use in high pressure reciprocating pumps. This system does away with the conventional high pressure packings used in such pumps and relies on a viscous fluid to form the seal between the plunger and the pump body. A floating piston seal is employed to separate the pumped fluid from the viscous fluid and impose the pumped fluid pressure to the viscous fluid sealant.

3,742,823

PISTON STRUCTURE

Max G. Fiedler, 585 Pugh Road, Strafford, Pa.

Filed Sept. 27, 1971, Ser. No. 184,083
Int. Cl. F16j *1/02, 9/20*
U.S. Cl. 92—219 **2 Claims**



The piston structure comprises a body having a substantial number of circumferential grooves each receiving a piston

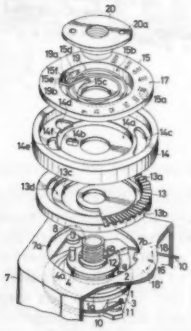
ring, the radially outer portions of said rings extending vertically in spaced relation to the piston to comprise, in effect, a substantially continuous cylinder wall-engaging sleeve, thus reducing contact of the piston itself with the cylinder wall, groove engaging portions of the rings spaced from the bottoms of the grooves to receive oil for cushioning the rings and permitting expansion of the piston.

3,742,824

AUTOMATIC EXPOSURE DEVICE FOR CAMERA

Hiroshi Ueda, Nara, and Takeshi Egawa, Wakayama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1972, Ser. No. 233,653
Int. Cl. G01j *1/00*; G03b *9/02*, *19/00*
U.S. Cl. 95—11 R **6 Claims**



An automatic exposure device comprising a striplike electric resistor and a brush in sliding contact therewith which are rotatable by film speed setting operation and diaphragm aperture adjusting operation to be shifted relative to each other so that the electric resistance determined by the change in the relative position of the resistor and brush serves as an element for determining automatic exposure. The device further includes a film speed dial, a positioning disc for setting the dial in a position corresponding to a film speed and an exposure adjusting member which rotates one of the brush or the electric resistor. By disengaging the film speed dial from the positioning disc, the exposure adjusting member is permitted to move the film speed dial in operative relation thereto, while when the positioning disc is in engagement with the film speed dial, the exposure adjusting member can be rotated intentionally.

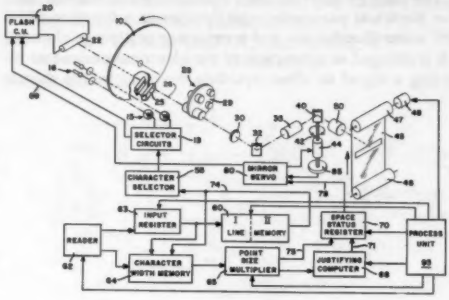
3,742,825

CHARACTER SPACING SYSTEM FOR PHOTOTYPESETTING

Eliezer Y Shapiro, New York, N.Y., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed June 26, 1970, Ser. No. 50,025
Int. Cl. B41b *13/10*
U.S. Cl. 95—4.5 **8 Claims**

A character image projection system successively projects image bearing light beams along a common optical axis toward a photosensitive surface. The images of the individual characters are spaced on the photosensitive surface to form lines of composition. Spacing is accomplished by collimating the image bearing light beams, then diverting the collimated beam by means of a movable reflecting surface into a refocusing and scanning lens assembly from which the light beams emit onto the photosensitive surface. The position of the reflector is controlled by a servo mechanism which responds to character image space information from a computer. The servo mechanism incorporates a closed loop with positional feedback derived from an encoder driven synchronously with



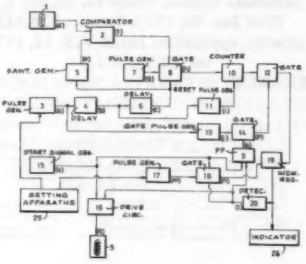
the reflecting surface. Each subsequent position of the reflecting surface is defined by a unique address code finding correspondence in the encoder.

3,742,826

EXPOSURE CONTROL DEVICE

Yotaka Kohtani, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,108
Claims priority, application Japan, Jan. 7, 1970, 45/2456
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **10 Claims**



In the exposure control apparatus disclosed, a photoelectric element converts light to which it is exposed to an electrical quantity. A pulse entry circuit responds to the photo-electric element and enters a sequence of sets of pulses into a memory. Each set of pulses corresponds in number to the electric quantity and erases the previous set. A timing clock responds to a signal from a shutter opening member and keeps reading out the content of the memory until the memory is empty at which time the circuit, in conjunction with the memory, produces a shutter closing signal.

3,742,827

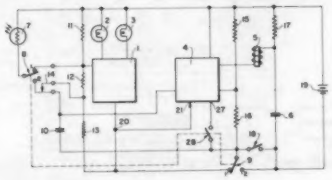
SHUTTER CONTROL APPARATUS FOR PHOTOGRAPHIC CAMERAS

Otto Wisst, Waiblingen, and Karl-Heinz Haberle, Stuttgart-Wangen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,095
Claims priority, application Germany, Mar. 17, 1970, P 20 12 499.6
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE **9 Claims**

In a camera having a light-integrating, timing circuit for determining the exposure interval in accordance with the level of scene illumination, a shutter mechanism for uncovering and

covering the exposure aperture and means for disabling the covering of the exposure aperture by the shutter mechanism until the shutter mechanism has uncovered the exposure aperture. The timing circuit includes a photosensitive element having an electrical parameter which varies as a function of incident scene illumination and a capacitor or storage element, which is charged as a function of the electrical parameter for providing a signal to effect aperture covering by the shutter



mechanism. Further, the timing circuit includes a test circuit operable in a first or measuring mode to be coupled to the photosensitive element for providing an indication of whether there is sufficient scene illumination for film exposure and for varying a signal upon the capacitor element during the test mode in order to reduce the exposure interval and to thereby compensate for any delay that the shutter mechanism may have in effecting aperture covering.

3,742,828

CAMERA HAVING MEANS FOR COMPUTING A FLASH GUIDE NUMBER

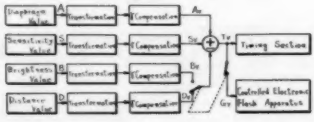
Tohru Nakajima, Chiharu Mori, both of Tokyo, and Masatoshi Marui, Saitama, all of Japan, assignors to Asaki Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 26, 1972, Ser. No. 220,915

Claims priority, application Japan, Feb. 12, 1971, 46/6014

Int. Cl. G03b *1/44*

U.S. Cl. 95—10 CE **4 Claims**



A camera which is capable of automatically computing a flash guide number. The camera has electronic input structure connected electrically with a computing structure for supplying to the latter signals in accordance with the APEX system and corresponding to a selected aperture setting, a selected distance setting, and a selected film speed setting. The computing structure computes a flash guide number in accordance with these signals. An electrical flash unit is provided for providing flash illumination, and the flash unit is electrically connected with the computing structure so as to determine the amount of flash illumination in accordance with the flash guide number which is computed by the computing structure.

3,742,829

MECHANICAL DIFFERENTIAL FOR AN EXPOSURE METER AT PHOTOGRAPHIC CAMERAS

Lennart Ragnar Johansson, Landvetter, and Lave Tenne, Norrbyvallda, both of Sweden, assignors to Fritz Victor Hasselblad, Goteborg, Sweden

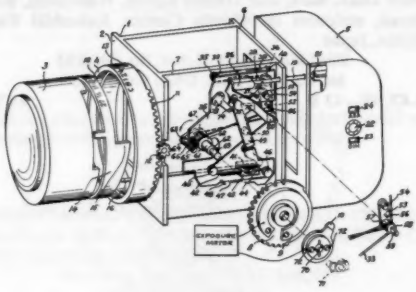
Filed Feb. 18, 1972, Ser. No. 227,534

Claims priority, application Sweden, Apr. 2, 1971, 4294

Int. Cl. G03b *17/00*

U.S. Cl. 95—10 FS **17 Claims**

A camera, of the type provided with interchangeable lenses having preset diaphragms and also provided with exchangeable film magazines, includes an exposure meter which incorporates a differential, e.g., of the cable or articulated type. Correction values for two exposure factors are applied as inputs to the differential through the agency of two axially movable rods which sense adjustable stop members which are, in turn, positioned in accordance with said correction values; and the correction value for a third exposure factor is supplied to the exposure meter independently of the differential. The differential is provided with a release device operative to en-



gage the differential to permit automatic exposure measurement when the two adjustable stop members are available for sensing, and operative to disengage the differential when at least one of the adjustable stop members is not available for sensing, thereby to permit the necessary correction factors to be manually set into a control box forming a portion of the mechanism. A signal device, responsive to the position of the release device, indicates whether automatic or manual exposure measurement is to be effected.

3,742,830

INFORMATION HOLDING APPARATUS

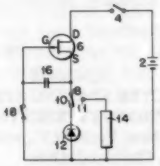
Soichiro Matsuzaki, and Isao Kondo, both of Tokyo, Japan, assignors to Olympus-Optical Co., Ltd., Tokyo, Japan

Filed June 30, 1972, Ser. No. 267,979

Claims priority, application Japan, July 6, 1971, 46/49774; Dec. 25, 1971, 46/334; Jan. 10, 1972, 47/5926; Jan. 21, 1972, 47/9375; Jan. 21, 1972, 47/9376; Apr. 22, 1972, 47/48011

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **14 Claims**



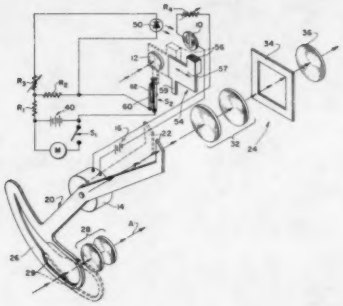
An information holding apparatus comprising an information input element so disposed as to allow the passage therethrough of certain current corresponding to input light being stored; a field effect transistor connected in series to said information input element; a constant voltage bias source for supplying ias voltage to the information input element and field effect transistor; a capacitor connected between the source and gate of the field effect transistor; and a switch for connecting the transistor to the input element at the time of storing information and selectively connecting the transistor to the load at the time of reading out the information.

3,742,831

BATTERY CHECKER FOR CAMERAS

Edward J. Cator, Naples, and William P. Ewald, New York, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 234,589, March 14, 1972, abandoned. This application July 26, 1972, Ser. No. 275,607
Int. Cl. G03b 7/08; G01j 1/42; G03b 17/18
U.S. Cl. 95—10 CE 4 Claims



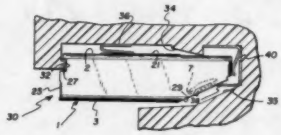
Battery checking apparatus for cameras including a photoresponsive element and galvanometer operative for moving a signal vane into and out of a viewable position in a viewfinder in accordance with the intensity of the ambient light, and a light-emitting diode placed adjacent to the photoresponsive element and connectable in circuit with a camera battery. The apparatus is effective when the battery is to be checked for connecting the battery-diode circuit and for blocking ambient light from striking the photoresponsive element so that the photoresponsive element is illuminated only by the light from the light-emitting diode. The movement of the light level indicator relative to the viewfinder is thus an indication of the light emission from the light-emitting diode, and is therefore an indication of the battery power condition. Circuitry is provided for varying the voltage applied to the light-emitting diode from the battery.

3,742,832

APPARATUS FOR RECEIVING A BATTERY HOLDER

Jeffrey R. Stoneham, Rochester, and Benjamin B. Adams, III, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 76,836, Sept. 30, 1970,. This application Feb. 16, 1972, Ser. No. 226,924
Int. Cl. G03b 19/00
U.S. Cl. 95—11 R 3 Claims



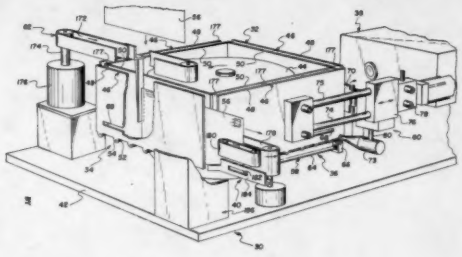
A camera having a cavity for receiving a battery holder of the type having an elongated dimension, an end wall generally normal to the elongated dimension of the holder, and a slot in the end wall. The camera cavity has an elongated shape longer than the elongated dimension of the battery holder and an opening at one end through which a battery holder may be inserted and removed. A rib on the camera adjacent the opening enters the groove of a received battery holder and a spring in the other end of the cavity resiliently urges the battery holder toward the rib to secure the holder in the cavity.

3,742,833

SYSTEM FOR OPTICALLY ENCODING AN ITEM AND VERIFYING SAME

John M. Sewell; Lawrence J. Matteson, and Stuart F. Ring, all of 901 Elmgrove Road, Rochester, N.Y.

Filed June 14, 1971, Ser. No. 152,917
Int. Cl. G03b 29/00
U.S. Cl. 95—12 9 Claims



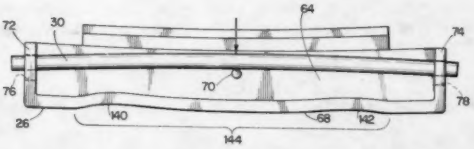
Apparatus for optically encoding an item and verifying same, generally including a rotatable index table for sequentially accepting items and carrying each item to a first station where direct printout photosensitive material is applied to a predetermined portion of the item by spraying, to a second station where an optical code image is formed by ultraviolet radiation impinging on a plurality of piezoelectric elements and projected onto the photosensitive material and printed out thereon. The item is then rejected from the table and preferably read at a verification station to verify the accuracy of the encoded data.

3,742,834

PHOTOGRAPHIC APPARATUS TO SPREAD PROCESSING FLUID IN UNIFORM LAYER

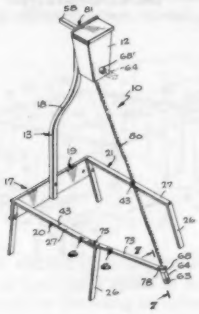
Earl R. Thoenen, Newburyport, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 26, 1970, Ser. No. 50,241
Int. Cl. G03b 17/50
U.S. Cl. 95—13 13 Claims



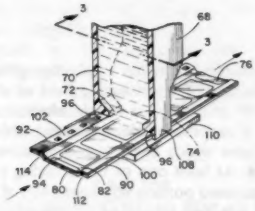
A pair of spreader elements in photographic apparatus to effect the spreading of a processing fluid as a layer between two sheets of material as such sheets are advanced therebetween. The spreader elements are provided with a pair of facing surfaces which exert a compressive force on the sheet materials. At least one of these facing surfaces is provided with a recessed portion adjacent each of its ends to initially provide selected increased thicknesses of processing fluid in the fluid layer formed immediately thereunder. In a preferred embodiment, the spreader elements are pivotally mounted for movement into and out of juxtaposition, with one of such elements being formed of a resiliently flexible material having a concavity initially provided in its facing surface and extending substantially thereacross. When such pivotally mounted spreader elements are disposed in their operative position, a force is directed centrally against the resiliently flexible member to deform its facing surface whereby a small concavity is provided adjacent each of its ends.

3,742,835
COLLAPSIBLE CAMERA ASSEMBLY
Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif.
Filed Apr. 2, 1970, Ser. No. 25,189
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 17 Claims



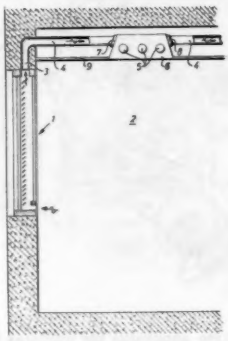
A camera assembly including a stand having a base portion adapted to rest on the ground and extend about an area to be photographed, a structure projecting upwardly from the base, and a camera mounted by the latter structure and aimed downwardly to photograph the specified area. The base of the stand includes a member extending along one side of the area to be photographed and carrying two leg units at two opposite sides of that area and mounted to the member for pivotal movement between downwardly projecting active positions and more horizontal retracted positions preferably lying in essentially the plane of the mentioned "member." The upwardly projecting camera carrying structure may also be movable to a generally horizontal retracted position to reduce the overall size of the assembly to a minimum for portability. A flash gun may be mounted to one of the leg units, preferably on an arm which itself can retract from an outwardly projecting position to a folded position of extension alongside or near the leg unit.

3,742,836
PHOTOGRAPHIC SYSTEM EMPLOYING FILM PROTUBERANCES FOR CONTROLLING THE APPLICATION OF FILM PROCESSING FLUID
Gerald H. Cook, Lynnfield, and Paul W. Thomas, Duxbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 3, 1972, Ser. No. 214,909
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R 13 Claims



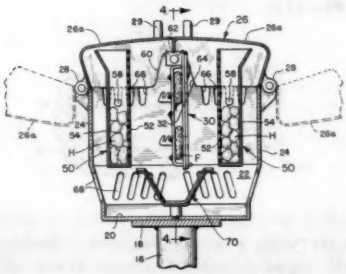
Photographic system employing a motion picture film strip carrying rail-like protuberances which cooperate with a doctor blade processor to precisely space the latter from the film emulsion and thereby express a measured thickness of processing fluid onto the exposed film as the latter is progressively drawn thereacross. Preferably, the film employs margin rails formed by offset edge portions of the film which are configured to interfit with similar portions of adjoining film turns when the film strip is convolutely stored.

3,742,837
ARRANGEMENT AT VENTILATION INSTALLATIONS IN ROOMS PROVIDED WITH EXHAUST AIR WINDOWS AND LIGHTED BY A NUMBER OF FITTINGS
Karl-Erik Samuelsson, Klinten, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed July 14, 1971, Ser. No. 162,595
Int. Cl. F21f *7/00*; F21v *33/00*
U.S. Cl. 98—40 DL 2 Claims



An arrangement at veltilation installations applied to rooms with exhaust air window and being lighted by fluorescent tubes in fittings or fixtures distributed over the ceiling, wherein the passageway for conducting away from the room, the exhaust air being collected adjacent the window surface, is connected to passageways preferably mounted in the ceiling of the room, each of said passageways passing through said fittings of the room for cooling the fluorescent tubes before said exhuast air is conducted away or recirculated to the room via a conditioning unit.

3,742,838
VERTICAL GRILL DEVICE
Fred H. Luschen, 711 Greenview Road, Itasca, and Raymond C. Piccony, 246 Pamela Drive, Bensenville, both of Ill.
Filed Nov. 1, 1971, Ser. No. 194,210
Int. Cl. A47j *37/07*
U.S. Cl. 99—389 5 Claims



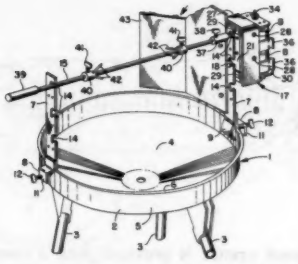
A grill device for cooking food by means of heating materials such as charcoal or the like, including a housing adapted to enclose and support a food holding member and a pair of heating material holding members adjustably positionable on opposite sides of the food holding member.

3,742,839

BATTERY-OPERATED ROTISSERIE WITH DETACHABLE SPIT SUPPORTS

Joseph P. Maley, 1915 E. Wallings Road, Broadview Heights, Ohio

Filed Feb. 7, 1972, Ser. No. 223,952
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 HV 4 Claims



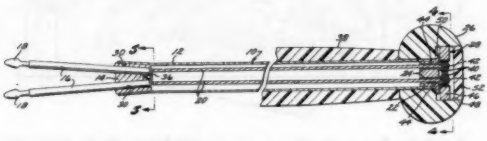
A rotisserie characterized in the provision of a pair of vertical spit support strips having screw clamps at their lower ends for securing on the rim of a barbecue grill firebox (or optionally to the upper ends of wood stakes driven into the ground), said support strips being provided with at least three vertically spaced apart inverted L-shaped slots including horizontal portions open at one edge of each support strip and vertical portions extending downwardly from the respective horizontal portions, the bottom or middle slot of one support strip constituting a support for a self-contained battery-operated spit drive unit which has its spit drive shaft extending through the vertical portion of a slot above that which supports the drive unit. The end of the spit remote from the drive unit is supported by the bottom of the vertical portion of the middle or top slot in the other support strip. A further, characterizing feature of the rotisserie herein is that the adjustable meat holders on the spit are of simple form having straight divergent prongs embedded in the meat being barbecured.

3,742,840

ROTARY FORK

James M. Cogswell, 326 10th St., Seal Beach, Calif.

Filed May 3, 1972, Ser. No. 249,845
Int. Cl. A47j *37/04*, *43/18*, *43/28*
U.S. Cl. 99—421 A 4 Claims



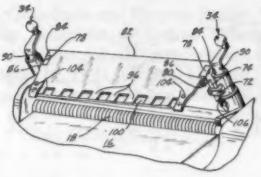
A rotary fork for roasting wieners, marshmallows and the like including a cylindrical barrel adapted to rest upon a suitable support, tubes at the front of the barrel telescopably housing tines, cables connected to the tubes, a gearing system at the rear of the barrel coupled to the cables, and a handle element to operate the gearing system to twist the cables and thereby rotate the tubes without rotating the barrel and without affecting the telescopability of the tines.

3,742,841

FATTING ATTACHMENT FOR SKINNING MACHINES

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 56,319, July 20, 1970, Pat. No. 3,674,071. This application Mar. 4, 1971, Ser. No. 120,823
Int. Cl. A22c *17/12*
U.S. Cl. 99—589 6 Claims



A fatting attachment for skinning machines comprising a straight disposable fatting blade mounted above the skinning blade of the machine. Adjustment means are secured to the opposite ends of the fatting blade so that the fatting blade can be moved toward and away from the skinning blade to vary the depth of the fatting blade in the fat.

ERRATUM

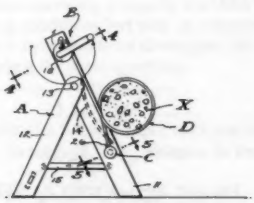
For Class 100—35 see:
Patent No. 3,742,537

3,742,842

TRASH BALER

Daniel A. Pierens, 3677 Ocean View Avenue, Los Angeles, Calif.

Filed July 22, 1971, Ser. No. 165,195
Int. Cl. B30b *5/04*
U.S. Cl. 100—212 10 Claims



A portable device in the form of an integral and collapsible apparatus for bundling and elevating debris or the like, characterized by draw lines and anchors therefor which are combined with a releasable winch means in a manner to perform said bundling and elevating functions, and to the end that debris is compacted and positioned for the convenience of tying and then releasable for disposal.

3,742,843

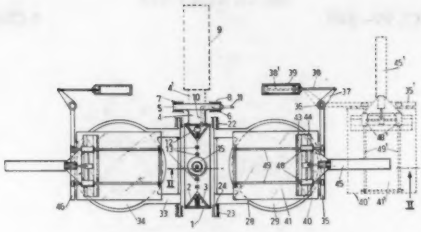
APPARATUS FOR SIMULTANEOUSLY DECORATING BOTH SIDES OF A THREE DIMENSIONAL ARTICLE

Josef Hubertus Gulikers, Borgharen-Maastricht, Netherlands, assignor to N.V. Koninklijke Sphinx-Ceramique v/h Petrus Regout, Maastricht, Netherlands

Filed Dec. 17, 1970, Ser. No. 99,103
Int. Cl. B41f *17/18*
U.S. Cl. 101—41 10 Claims

An apparatus for decorating articles by, for instance, sereen printing, wherein at least one ring is used which is open at at least one side and whost inside diameter decreases from the

opening; means are provided inside the ring to retain an article; the inside wall of the ring is formed with openings connected via a line to a vacuum source and an excess pressure source; and wherein a frame is provided which can be pivoted between two positions and has a resilient diaphragm, the



diaphragm having a carrier for readily receiving and redelivering color or ink, and in one position the frame closes the open side of the ring with the diaphragm and in the other position rests on a table above which a printing unit, for instance, a screen printing unit can be disposed.

3,742,844

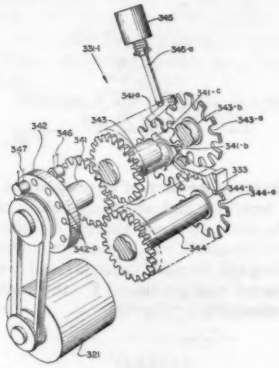
PRINT WHEEL CONTROL SYSTEM

Genio R. Arciprete, Lexington; Adrian P. Brokow, Woburn; Richard L. Dumais, Ashland, and Richard F. Stucchi, Hudson, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 786,813, Dec. 9, 1968, Pat. No. 3,662,362, which is a continuation of Ser. No. 681,765, Nov. 9, 1967, abandoned. This application Dec. 14, 1970, Ser. No. 97,562

Int. Cl. B41j *1/34*

U.S. Cl. 101—93 C **4 Claims**



Print wheel control system for resetting and setting a plurality of print wheels, said control system having means for generating timing pulses in accordance with the rotation of the print wheels, a pulse signal distributor for generating control signals associated with successive characters on each of the print wheels, and a selector network and controls responsive to the control signals for arresting the movement of each of the print wheels, depending upon the character of each of the print wheels to be selected.

3,742,845

CONTROL SYSTEM FOR HIGH-SPEED PRINTING MACHINES

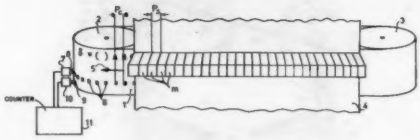
Aleardo Giani, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Oct. 28, 1971, Ser. No. 193,254

Claims priority, application Italy, Nov. 11, 1970, 31568 A/70

Int. Cl. B41j *1/20, 5/30*

U.S. Cl. 101—93 C **13 Claims**



A high speed printer is provided with a control circuit wherein each binary code representing a character to be printed in an assigned printing position is linked to one or more recognition bits which serve to determine if such character belongs to that group or groups in a set which are repeated with greater frequency.

3,742,846

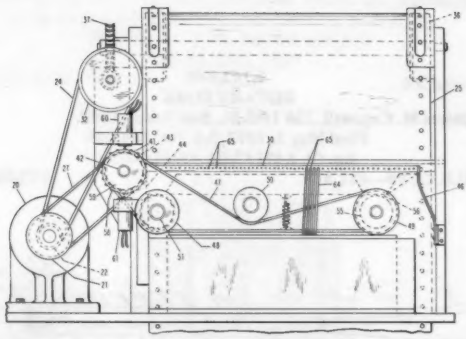
WIRE PRINTER WITH PRINT HEAD MOVED IN FIGURE EIGHT PATTERN

LaVerne Frank Knappe, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,113

Int. Cl. B41j *3/12*

U.S. Cl. 101—93 C **11 Claims**

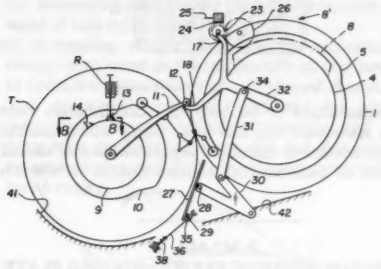


A printer for generating a dot matrix has a single print element that sweeps out a dot matrix for a character position, row by row with respect to a continuously moving document. A single print head which is motion synchronized with the document guides a series of such print elements through a closed curved path to sweep out the matrix as a series of rows of dots at each character position. Interrelating the adjoining character positions to generate a continuous matrix of dot positions also enables the printer to be used to print graphics or as an XY plotter.

3,742,847
SHEET TURNING MECHANISM FOR PERFECTORS

Hans Zimmermann, Heidenau; Otfried Rudolph, Dresden, and Wilfried Kuhn, Radebeul, all of Germany, assignors to Veb Polygraph Leipzig Kombinat Fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Nov. 27, 1970, Ser. No. 93,202
Int. Cl. B41f 5/02
U.S. Cl. 101—230 **11 Claims**

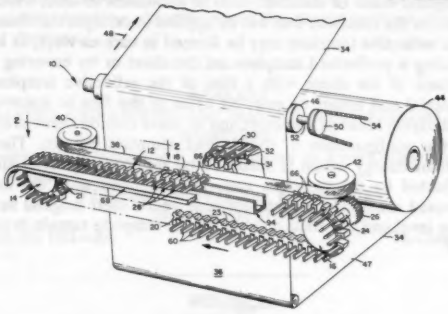


Mechanism for controlling sheet manipulators, including sheet guides, in a perfector press, when the press shall be switched from obverse-obverse to obverse-reverse printing, or vice versa. A first printing cylinder and an adjacent transfer cylinder of the press have linkages pivoted about the respective cylinder axes and swingable, relative to the cylinders, in coordinated and partly overlapping motions. The linkage of the first printing cylinder repositions a sheet guiding plate by crank, link and guide units. It also repositions the sheet gripping mechanism of the first cylinder and, with lost motion, that of the transfer cylinder. Exact positioning of all mechanisms are provided by detent and release means in the transfer cylinder.

3,742,848
ENDLESS CARRIER PRINTER

Francis E. Huntoon, Des Plaines, and James F. Kearney, Oak Park, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Dec. 15, 1971, Ser. No. 208,198
Int. Cl. B41j 1/20
U.S. Cl. 101—93 C **14 Claims**

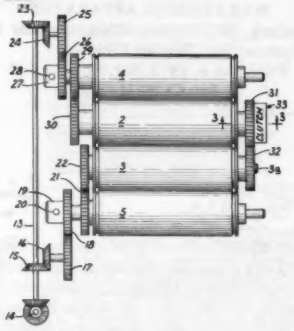


A plurality of printing pallets have a plurality of type members secured on the inner end portions of shanks which are removably mounted in uniformly fashioned and spaced apertures extending transversely of an endless carrier, therey enabling type replacement in the printer. The upper edges of sides forming a fixed channel disposed below the upper course of the carrier are disposed at a level for engaging the inner and outer end portions of the shanks and adjusting the type faces vertically for printing. Gross positioning of the pallets in a path transversely of the carrier is effected by a pair of opposed bosses disposed at opposite sides of the carrier for engaging the type members and the shanks. Fine or final positioning of type faces in printing positions transversely of the carrier is achieved by printing action which drives the outer ends of the shanks against a backstop.

3,742,849
COUPLING ARRANGEMENT FOR PERFECTING LITHOGRAPH PRESS UNIT

Harry M. Greiner, Offenbach, and Hartwig Banfer, Muhlheim, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

Filed Mar. 19, 1971, Ser. No. 125,946
Claims priority, application Germany, Mar. 24, 1970, P 20 14 070.9
Int. Cl. B41f 5/04
U.S. Cl. 101—220 **1 Claim**

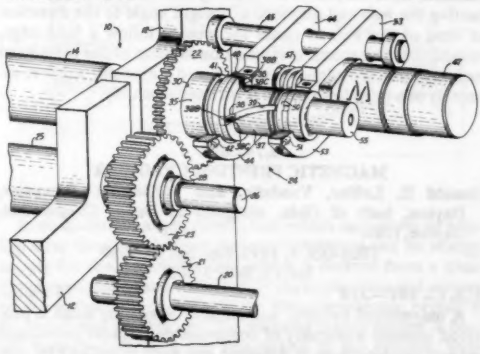


A lithograph press in which a web is simultaneously printed on both sides by passing the web between a pair of blanket cylinders, the blanket cylinders being driven from associated plate cylinders and the plate cylinders being coupled to a common drive shaft. The blanket cylinders are coupled together by gears to keep them operating at exactly the same peripheral speed under running conditions but with an interposed clutch to permit the blanket cylinders to be disengaged for individual phase adjustment when the press is running.

3,742,850
REGISTRATION ADJUSTMENT MECHANISM

Charles K. Sedlak, Brookfield, Wis., assignor to Faustel, Inc., Butler, Wis.

Filed Apr. 17, 1972, Ser. No. 244,405
Int. Cl. B41f 13/24
U.S. Cl. 101—248 **6 Claims**



A printing press roll is driven by a drive shaft by means of a drive mechanism. The latter is adjustable, first, to change the

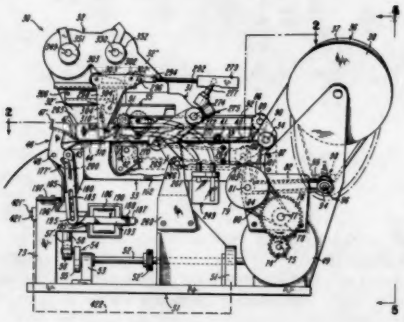
phase relation between the press roll and the drive shaft and, second, to move the roll axially. Both adjustments are used to achieve proper registration between the press roll and a web moving through the press. The adjustable drive mechanism comprises a cylindrical pilot ring rigidly secured to the press roll and a hollow cylindrical register ring slidably mounted on the pilot ring. A first spur gear is attached to the register ring and is in constant mesh (and sliding relationship) with a second spur gear driven by the drive shaft. Inwardly projecting teeth on the register ring engage spiral grooves on the surface of the pilot ring. Means are provided to axially move the register ring and thereby change the phase relation between the press roll and drive shaft. Means are also provided to simultaneously move both the register ring and pilot ring axially and thereby move the press roll axially without causing a phase change.

3,742,851

WEB FEEDING APPARATUS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 6, 1972, Ser. No. 215,742
Int. Cl. B41f *1/08*
U.S. Cl. 101—295 **7 Claims**



There is disclosed a printing, feeding and severing method and apparatus for carrying out the method. The apparatus includes a print head assembly and a platen assembly movable relatively toward and away from each other into and out of printing cooperation, mechanism for inking the print head assembly, mechanism for feeding a web of record members to between the print head assembly and the platen assembly, the web being in roll form and there being means to assist the gradual unwinding of the roll with gradual paying out of web material from the roll to the feeding mechanism, an idler contacting the web and disposed at a slight angle to the direction of feed of the web to cause the web to follow a feed edge, record severing means disposed downstream of the print head assembly and the platen assembly, and a modular support assembly of a print head of the print head assembly.

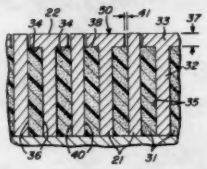
3,742,852

MAGNETIC PRINTING CYLINDER

Donald E. Leffler, Vandalia, and William B. Dempster, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Oct. 1, 1971, Ser. No. 185,560
Int. Cl. B41f *27/02*
U.S. Cl. 101—378 **14 Claims**

A magnetized cylinder and method of making same is provided wherein a plurality of compressible resilient permanent magnet constructions is provided and each is defined by permanent magnets embedded in an elastomeric compressible matrix. Each permanent magnet construction is frictionally held within an associated retaining means of an annular member made of a non-magnetic material and comprising the magnetized cylinder. The annular members are supported alternately with a plurality of rings made of a magnetic material along an elongated central support to define such cylinder. The use of such permanent magnet constructions enables each



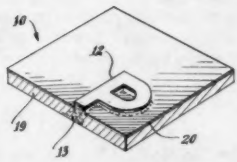
magnet construction to be held in more intimate contact against an associated ring and more firmly within associated retaining means due to the radial expansion thereof caused by compression of each magnet construction in its assembled state.

3,742,853

METHOD OF FORMING RELIEF PRINTING PLATE

Robert M. Landsman, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. Nos. 145,187, May 20, 1971, and Ser. No. 145,315, May 20, 1971, and Ser. No. 203,660, Dec. 1, 1971. This application June 26, 1972, Ser. No. 266,207
Int. Cl. B41d *7/00*
U.S. Cl. 101—401.1 **11 Claims**



A relief printing plate is formed by providing a sheet of thermoplastic material that collapses within its own volume when radiant energy, such as infrared radiation, is applied to it, and by shielding areas of the sheet that are to be left in relief with a template made of material, such as aluminum or zinc, which reflects the radiation that will be applied to collapse the sheet. The reflective template may be formed in various ways, as by placing a preformed template on the sheet or by covering a surface of the sheet with a film of the reflective template material and removing selected areas of the film to uncover underlying areas of the sheet and to leave film on other areas in the configuration of the desired template pattern. Then radiant energy which is absorbed by the sheet material and reflected by the template material is applied until the uncovered areas of the sheet collapse below their original surface level and the areas covered by the template remain in relief.

3,742,854

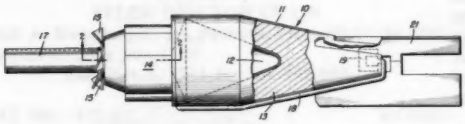
FUZE

William J. Donahue, Takoma Park, and Thomas A. Cammack, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1965, Ser. No. 459,132
Int. Cl. F42c *1/14*
U.S. Cl. 102—7.4 **9 Claims**

1. A shaped charge bomb comprising,
an elongated hollow bomb casing having a nose portion at one end and a tail portion at its other end,

a shaped explosive charge having a conical metal-lined recess formed therein,
said shaped charge being positioned within said bomb casing so that said recess is adjacent to the nose of the bomb,
a cylindrical striker tube mounted upon the nose of the bomb casing for longitudinal sliding movement relative to the bomb casing,
said striker tube being coaxially aligned with said conical recess and positioned forewardly thereof, and
a mechanical detonating means mounted upon said casing for detonating said shaped charge in response to movement of said striker tube,
said detonating means including an explosive booster charge positioned in the tail portion of said bomb casing in operative association with said shaped charge,
a stab detonator type fuze positioned for acutation in response to movement of said striker tube, and
a detonating cord leading from said stab detonator to said booster charge and being positioned exteriorally of the bomb casing,

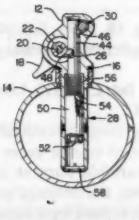


a striker pin mounted upon said casing and positioned for movement by said striker tube to detonate said stab detonator,
a fuze arming mechanism mounted upon the nose of the bomb casing including
a cylindrical bearing tube mounted upon the nose of said bomb casing and being concentrically disposed about the periphery portion of said striker tube,
an annular arming rotor rotably mounted upon said bearing tube,
said stab detonator being mounted upon said arming rotor for rotation therewith from an unarmed position wherein said stab detonator is out of line with said striker pin and with said detonating cord to an armed position wherein said stab detonator is aligned with the striker pin and detonating cord, and
means for driving the rotor from its unarmed position to its armed position,
whereby the destructive jet produced by the shaped charge may impinge directly upon the target without interference.

3,742,855
SAFING AND ARMING MECHANISM FOR HAND-HELD MUNITION

George Webb, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed Sept. 29, 1971, Ser. No. 184,878
Int. Cl. B41l 47/10
U.S. Cl. 102—64 **10 Claims**

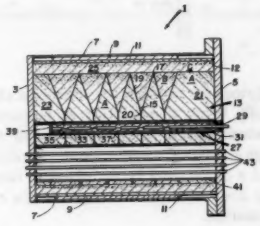


A safing and arming mechanism for hand-held munitions is disclosed. The safing and arming mechanism is incorporated in a fuze for use in hand grenade type munitions. The mechanism has but three moving parts which requires proper serial operation of the mechanism to cause arming. A lever must be actuated before a safing and arming bolt can be moved from a safing position to the arming position. The munition may also be resafed.

3,742,856
ADVANCED CONTINUOUS WARHEAD

Ludolph F. Welanetz, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 30, 1969, Ser. No. 839,795
Int. Cl. F42b 13/48
U.S. Cl. 102—67 **9 Claims**

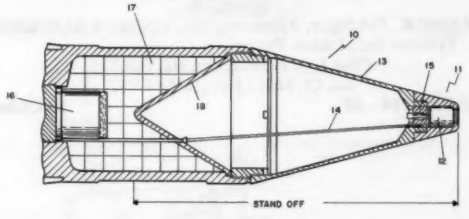


An improved continuous rod warhead mechanism featuring increased rod ejection velocity is disclosed. The more efficient warhead of the present invention is characterized by multipoint axial initiation and by a plurality of pressed grain explosives of desired detonation rates for producing a cylindrically expanding detonation wave front for meeting the rods face-on. Normal incidence of the detonation front on the rods may be employed without destroying ring continuity, thereby resulting in more efficient energy transfer and higher rod velocity.

3,742,857
FUZING SYSTEM FOR STABILIZED ANTI-TANK AMMUNITION

Harold A. Schmidt, 702 S. 15th St., No. 6, Blue Springs, Mo., and John C. Howell, 12 Hillside Road, Sparta, N.J.

Filed Apr. 5, 1971, Ser. No. 131,207
Int. Cl. F42c 11/00, 15/40, 19/2
U.S. Cl. 102—70.2 GA **6 Claims**

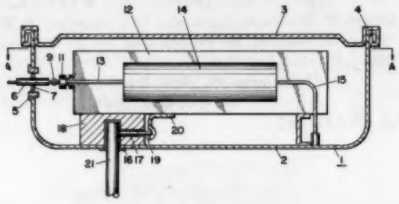


In combination a spin arming fuze which completes its arming after the setback force thereon terminates and an energy supply for detonating the fuze which is derived from a pressure transducer that is activated by the application and release of the setback force. Effectively, the piezoelectric crystal is loaded during setback and the resulting energy charge is bled off through a shorting bar responding to the setback. Subsequently, upon unloading, the crystal collects an opposite charge which is stored therein much like in a capacitor. This stored charge is then employed to activate the armed fuze upon impact of the projectile.

3,742,858
SENSOR-DETONATOR MODULE

Donald M. Stonestrom, West Chester, Pa., assignor to ICI America Inc., Wilmington, Del.

Filed May 20, 1971, Ser. No. 145,282
Int. Cl. F42b *5/08, 9/08*
U.S. Cl. 102—70.2 R 6 Claims



A sensor-detonator module for sensing a change in motion and electrically firing a detonator in response thereto. The sensor and detonator are sealed within a can. An insulated pin passes through the can to connect to a source of electricity. A capacitor and a diode may be provided to insure the firing of the detonator even though the circuit to the electrical source is broken or shorted.

3,742,859
EXPLOSIVE CHARGE

William G. Finnegan; Lohr A. Burkardt; William B. McLean; William S. McEwan, all of China Lake, and Edward W. Larocca, Placentia, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

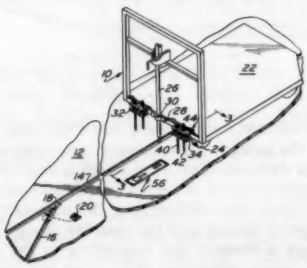
Filed Apr. 2, 1965, Ser. No. 445,279
Int. Cl. F42b *1/00*
U.S. Cl. 102—101 6 Claims

A dual explosive charge comprising concentric layers of differing detonation velocity compositions for use against armoured targets, in underwater ordnance and for cratering. The charge consists of a core composed of a composition having a detonation velocity of less than 5,000 meters per second and an annulus having a detonation velocity above 5,000 meters per second.

3,742,860
VEHICLE AND SYSTEM INCORPORATING SAID VEHICLE

Russell K. Fahringer, Allentown, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Aug. 4, 1971, Ser. No. 168,811
Int. Cl. B61l *13/02*; B65g *17/12*
U.S. Cl. 104—88 13 Claims

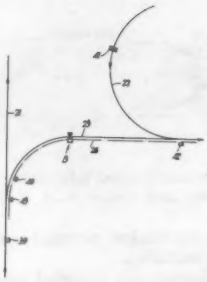


A two vehicle has a tow pin which extends into a guide slot which is intersected by shunt slots. A change-over means on the floor automatically raises one selector pin on the vehicle while the vehicle is moving along the guide slot and lowers another selector pin so as to change the designation of the vehicle represented by a particular shunt slot.

3,742,861
TRANSFER CONVEYORS

Keith Wilkinson, Stevenage, Hertfordshire, England, assignor to Geo. W. King Limited, Stevenage, England

Continuation of Ser. No. 10,391, Feb. 11, 1970, abandoned.
This application Nov. 4, 1971, Ser. No. 195,621
Claims priority, application Great Britain, Feb. 18, 1969, 8,840/69
Int. Cl. B61b *3/02*; B65g *17/42*
U.S. Cl. 104—96 3 Claims



In a conveyor wherein load carrying trolleys are normally propelled along a fixed trolley track by pusher dogs which depend from an endless driven chain disposed above such track there is provided a transfer unit for moving load carrying trolleys along any section of said trolley track above which there is no endless chain. The transfer unit, which is supported for movement along a path parallel with any such section of track includes reversible drive means whereby a drive may be imparted thereto in either direction and a laterally directed arm which is adapted to project into the path of any load carrying trolley present on such section of track and is effective on movement of the unit in one direction to propel such trolley. It is also envisaged that the transfer unit will be employed for transferring load carrying trolleys from the trolley track of one conveyor to the trolley track of a second conveyor and in such a case the trolley tracks of the two conveyors will be interconnected by means of a transfer track and the transfer unit will be arranged to move back and forth along a path parallel to said transfer track.

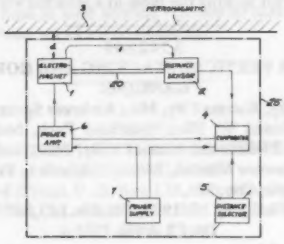
3,742,862
FLOATING ELECTROMAGNETIC SUSPENSION SYSTEM

Rudolf Gebhardt, and Max Gopfert, both of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Aug. 18, 1971, Ser. No. 172,770
Claims priority, application Germany, Aug. 21, 1970, P 20 41 553.6
Int. Cl. B61b *3/00*
U.S. Cl. 104—148 MS 10 Claims

A carriage traveling along a track of magnetically permeable metal is supported at one or more points by electromagnets energized by a variable current to maintain a predetermined spacing between the magnet poles and the overlying track. This sdpacing is sensed by a control circuit which comprises a magneto-electric transducer including a permanent megnet juxtaposed with a Hall-effect generator which is

located in the stray field of an associated electromagnet and whose output controls the energization of the latter, the two



magnets being so poled as to create a negative-feedback effect stabilizing the operation of the control circuit.

3,742,863

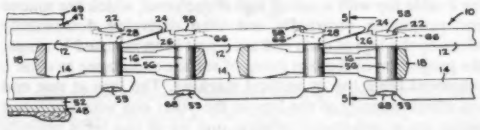
TELESCOPIC TOW CHAIN

Chester A. Rosenberger, Jr., Perkasie, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 9, 1971, Ser. No. 197,058

Int. Cl. B61b *13/00*

U.S. Cl. 104—172 BT **6 Claims**



A telescopic tow chain comprising spaced apart upper and lower links joined by means of vertical pins further includes slotted connecting links. The upper links have tapered leading and trailing edges which are able to slide above or below the adjacent upper links thereby permitting the chain to compress as the vertical pins slide together in the slotted connecting links permitting the chain to drive on the return run as well as on the primary run and eliminating the necessity of a takeup mechanism.

3,742,864

TRANSPORT SYSTEM PARTICULARLY UPRIGHT CABLEWAY, AERIAL CABLEWAY OR OVERHEAD RAILWAY

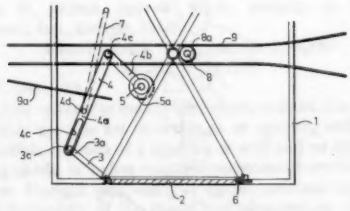
Anton Frech, Schongrund 21, 4600 Olten, Switzerland

Filed Dec. 15, 1971, Ser. No. 208,287

Claims priority, application Switzerland, Aug. 26, 1971, 12566/71

Int. Cl. B61b *11/00, 7/00, 3/00*

U.S. Cl. 104—173 **3 Claims**



A transport system, especially an upright cableway, aerial cableway or overhead railway wherein each cabin is provided with a door which, when closed, is locked and can be opened from the outside. Each door is equipped with a spring-loaded control lever provided at one end with a control pin. At each station there is provided at least one stationary control rail for displacing the control pin in a direction perpendicular to the direction of travel of the cabin and from a first into a second terminal position. In the first terminal position the door is closed and in the second terminal position the door is opened.

3,742,865

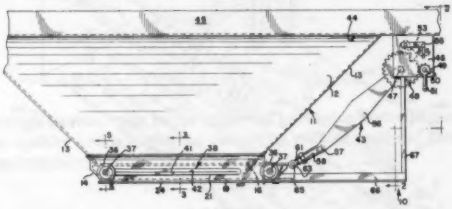
HOPPER DISCHARGE GATE ACTUATING MECHANISM

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed June 21, 1971, Ser. No. 155,070

Int. Cl. B61d *7/20, 7/22, 7/26*

U.S. Cl. 105—282 R **2 Claims**



A hopper discharge arrangement includes a plurality of rectangularly disposed sloping walls providing at their lower ends a discharge opening. The opening is controlled by a linkage actuated sliding gate consisting of upper and lower sections movable sideways to an out of the way position to permit the discharge of material through the opening. The gage sections include leading edges with the leading edge of the lower section terminating horizontally rearwardly with respect to the leading edge of the upper section. The gate is movable on wheels supported on shafts which project from the gate through horizontally spaced frame members provided with slots permitting sliding movement of the shaft during gate operation. The slots are sealed by a split sealing member which permits the sliding movement of the shafts while maintaining sealing integrity of the gate.

3,742,866

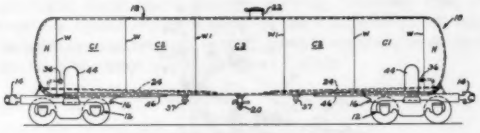
TANK CAR HAVING SLOPING BOTTOM

Robert F. Needham, St. Charles, and Wallace T. Geyer, Des Peres, both of Mo., assignors to ACF Industries Incorporated, New York, N.Y.

Filed May 17, 1971, Ser. No. 144,089

Int. Cl. B61d *5/00*

U.S. Cl. 105—360 **7 Claims**

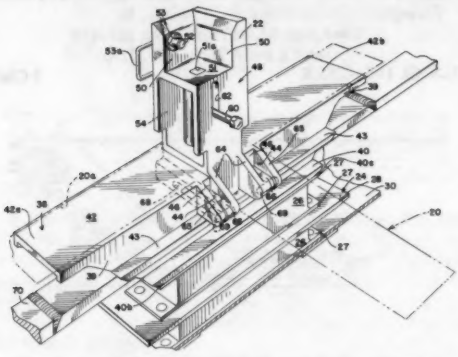


A cylindrical tank for use in railway tank cars, for example, having an inner bottom sloping from the ends of of the tank toward the center of the car for drainage purposes. A continuous slope plate structure is secured within each end portion of the cylindrical tank and slopes downwardly from the end of the tank to the center at a constant slope while tapering in width at a generally constant rate with an enclosed fluid-tight void space being formed between the bottom of the cylindrical tank and each slope plate. Each slope plate structure is generally arcuate as viewed in cross section and has an upwardly bowed convex upper surface to form a relatively narrow flow channel along each side of the slope plates directed toward the center of the car.

3,742,867
RAILWAY CONTAINER CUSHIONED SUPPORTING STRUCTURE

Thomas R. Schmitz, Dyer, Ind., and Theodore A. Branson, Harbert, Mich., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 6, 1971, Ser. No. 160,032
Int. Cl. B65j 1/22; B60p 7/08
U.S. Cl. 105—366 D 10 Claims

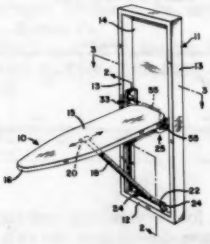


A series of container hold down brackets supported on resilient shear pads and connectable by a longitudinally extending bar which is engaged by a locking pin on the bracket when the bracket is in an on-deck supportive position. The bracket includes a slot portion which permits the bracket to move inwardly of the vehicle and to be pivoted into a stored position flush with the deck of the vehicle. A mounting stand which fixes the hold down bracket to the associated shear pad has an elongated top portion engageable with the underside of the deck to prevent tipping of the bracket upon deflection of the shear pads.

3,742,868
HEIGHT ADJUSTING AND LOCKING ASSEMBLY FOR CABINET MOUNTED IRONING TABLE

David S. Garceau, Columbus, and Silas J. Knoke, Seymour, both of Ind., assignors to Lear Siegler, Inc., Seymour, Ind.

Filed Dec. 3, 1971, Ser. No. 204,547
Int. Cl. A47b 3/00
U.S. Cl. 108—39 8 Claims

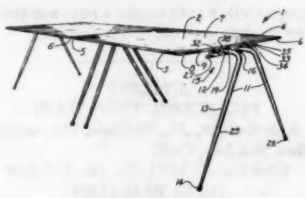


A cabinet mounted ironing table uses an essentially conventional ironing top, front leg and front leg adjustment. The table has a cross-rod attached to its inner end adapted to move vertically within a pair of vertical guide channels on each side of the cabinet. The cross-rod is movable into a series of height adjusting slots which are formed in a pair of vertical adjusting brackets at the upper ends of the guide channels or, in another embodiment are integrally formed in a molded or preformed cabinet shell. A locking member pivotally mounted on the inner end of the ironing table is adapted to be moved to a locking position adjacent an abutment surface of the cabinet. The abutment surface serves to prevent the cross-rod from being rocked out of the adjusting slots and provides a positive arrangement for locking the table at a selected vertical height.

3,742,869
TABLE FOR VERTICAL STACKING AND HORIZONTAL GANGING

Norman Polsky, Kansas City, Mo.; Ambrose Spencer, Shawnee Mission; Daniel W. Pike, Overland Park, both of Kans.; Edgar M. Lieberman, Kansas City, Mo., and Bobbie L. Snyder, Shawnee Mission, Kans., assignors to Fixtures Mfg., Corp., Kansas City, Mo.

Filed July 29, 1971, Ser. No. 167,347
Int. Cl. A47b 7/02
U.S. Cl. 108—64 5 Claims

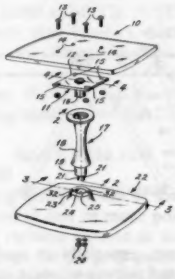


A table for vertical stacking and horizontal ganging including a table top with a pair of legs at each end, which are spaced and projecting outwardly and then diverging downwardly whereby the legs at each end are a pair in an inverted V-shape, the projection of the legs being of sufficient distance to clear a subjacent table top in vertical stacking. The legs at one end are offset laterally of the legs at the other end whereby when tables are at end-to-end relation one leg of one table projects between the upper portions of the adjacent pair of legs of the other table whereby the legs generally overlap and are along side of opposed legs of the other table. The legs are fixed to a mounting member secured to the underside of the table top and the mounting member has handle means extending therefrom to facilitate handling of the table. The mounting member has depending portions adapted to engage the top surface of a subjacent table and support the weight of overlying tables. Each end of the table has a male and female connector with connectors at one end being opposed to the connectors at the other end whereby when the tables are at end-to-end relation the male connector of one table is received in the female connector of the other table to secure the tables in ganged relation.

3,742,870
ARTICLE OF FURNITURE

Walter Gusdorf, and Charles Francis Camilleri, both of St. Louis, Mo., assignors to Gusdorf & Sons, Inc., St. Louis, Mo.

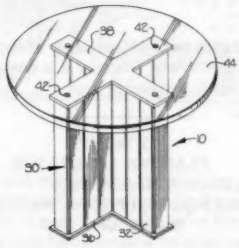
Filed Feb. 2, 1972, Ser. No. 222,906
Int. Cl. A47b 13/02
U.S. Cl. 108—150 10 Claims



An article of furniture in which a load bearing top platform, a supporting column assembly, and a base for the column as-

sembly are constructed for knockdown assembly. The column assembly consists of a plastic sheath molded onto a metal reinforcing sleeve in a manner to obtain a secure grip and the sleeve is formed to prevent possible slippage of the sheath and to engage the base in load bearing relation so that the column assembly and base act as a unit assembly.

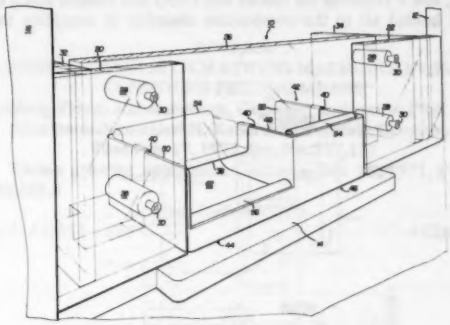
3,742,871
DECORATIVE FURNITURE AND METHOD OF FABRICATING SAME
Joseph Edward Kienel, P. O. Box 135, Acworth, Ga.
Filed Oct. 4, 1971, Ser. No. 186,314
Int. Cl. A47b *13/02*
U.S. Cl. 108—150 **4 Claims**



A decorative article of furniture such as a table or the like, and which incorporates a wall structure comprising a frame which defines one or more vertical substantially planar front surfaces and a plurality of elongated relatively narrow slats secured to each front surface to substantially cover the same. The side edges of each slat are inwardly beveled to define a dovetail cross section, and the outer surface and edges of each slat are covered by a facing panel of sheet material, such as stainless steel, which conforms to the dovetail outline of the slats to thereby maintain the facing panel and associated slat in assembled relationship. The wall structure is constructed by initially joining the slats to the planar surface of the frame in juxtaposed, parallel, spaced relationship, and then assembling the facing panels by telescoping each over the associated slat. By spacing apart the adjacent slats a distance equal to about twice the thickness of the facing panels, the side edges of adjacent panels will be contiguous along their length and a substantially planar outer surface will be formed by the medial portions of the facing panels. The wall structure may also have independent uses, such as in the fabrication of decorative wall panels for paneling rooms in a home or office.

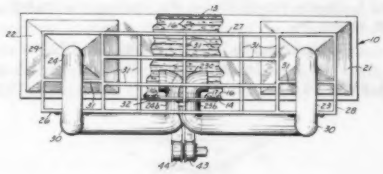
3,742,872
SAFETY CASHIER'S WINDOW SYSTEM AND THE LIKE
Eugene W. Sexton, Detroit, Mich., assignor to Total Safe Systems, Inc., Detroit, Mich.
Filed Nov. 22, 1971, Ser. No. 200,995
Int. Cl. E05g *1/00*
U.S. Cl. 109—19 **2 Claims**

A safety system for cashiers windows and the like comprises a portable module for insertion in an opening within a wall. The module consists of a counter or wall and an upwardly extending shield of bullet resistant see-through material on the counter. Upright side walls of bullet resistant material are spaced forwardly of the shield and mounted on the counter and extend laterally of the sides of the shield. Protective bullet resistant baffles extend rearwardly of the side walls beyond the shield to provide a passage for transmission of sound between the clerk and the customer, deflect the sound both ways through the passage between the shield and the side walls and protects an adjacent cashiers shield against bullets fired through the passage. One or more exchange boxes or pass-



through devices open to the customer to receive material from the cashier and open to the cashier to receive material from the customer.

3,742,873
SMOKELESS INCINERATOR
Jack E. Shinpoch, P.O. Box 51, Mojave, Calif.
Filed July 28, 1971, Ser. No. 166,916
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **3 Claims**

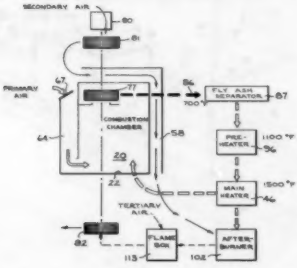


An incinerator is disclosed wherein the firebox has three openings, one being located higher than the other two, and wherein a conduit is provided to conduct gases exhausted therefrom to preferably the lowest one of the openings. Within the conduit is provided a venturi pump through whose throat is pumped air so that the venturi may draw the exhaust gases through the conduit, mixing the gases with the air and discharging the mixture into the firebox. Finally, the gases are exhausted from the remaining opening, relatively free of smoke or hydrocarbons. Preferably, the recirculation unit that includes the conduit and venturi pump is removeable so that any steel container may be used as a firebox.

3,742,874
SOLID WASTE INCINERATOR
Christian A. Eff, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 13, 1971, Ser. No. 207,161
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 A **15 Claims**

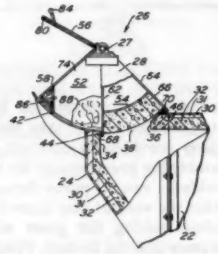
An incinerator for use in the kitchen with a heated air supply recirculating through an airtight combustion chamber in the absence of make-up air whereby during te initial stage of the operating cycle there is an oxygen starved condition to control combustion, vaporize the moisture and other volatiles and prevent backfires. Later in the cycle a supply of primary air is admitted to the combustion chamber. A blower is associated with the combustion chamber to recirculate a blast of

air within the combustion chamber as well as to exhaust a portion of the air from the chamber. A fly ash separator is located downstream of this exhaust. A main heater means external of the combustion chamber is downstream of the fly ash separator, and it removes the smoke and odors and returns much of the heated air to the combustion chamber to complete the



recirculation circuit and cause ignition of the solid combustibles. A portion of the heated air from the main heater means is fed to an afterburner wherein secondary air is admitted for replenishing the oxygen and completing the combustion of any volatiles that might remain in the exhaust gases, and then the gases are treated in a flame-box with a supply of tertiary air before the gases are returned to the atmosphere.

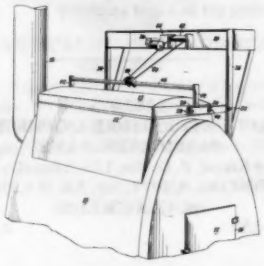
3,742,875
CHARGING DOOR FOR INCINERATOR UNIT
Richard J. Eberle, North Wales, Pa., assignor to Stainless, Inc., North Wales, Pa.
Filed Aug. 9, 1971, Ser. No. 170,182
Int. Cl. F23g 5/00
U.S. Cl. 110—18 R **10 Claims**



An incinerator charging door which includes both a closure and a compartment for receiving the material to be incinerated. The compartment and the closure are mounted in side-by-side relation so that they can be selectively aligned with an opening to the incinerator and either one or the other is interposed between a user and the incinerator.

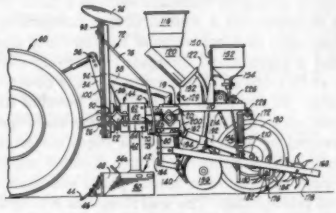
3,742,876
OPENING MECHANISM FOR INCINERATOR DOOR
Charles E. Wiser, Wellsville, and Donald O. Peterson, Friendship, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Dec. 8, 1971, Ser. No. 206,226
Int. Cl. F23m 7/00
U.S. Cl. 110—176 **2 Claims**

An incinerator having a housing that is provided with a top-opening door to permit loading by gravity of combustible material therein. A loading means for the incinerator includes an actuator for the top-loading door that when motivated first moves the door vertically until the door is removed from ther



incinerator and then swings it arcuately about a center point at the side of the incinerator whereby it is completely out of the way of loading equipment being used.

3,742,877
PLANTER APPARATUS
Irvin B. Coffee, Route 4, Marlow, Okla.
Filed Sept. 24, 1970, Ser. No. 75,044
Int. Cl. A01c 5/00
U.S. Cl. 111—6 **20 Claims**

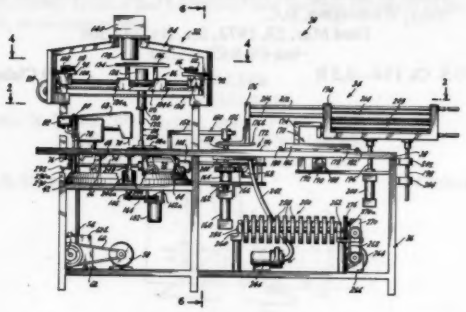


Apparatus for planting seeds in beds and including a framework having a forward side and a rear side with a plurality of furrow forming plows carried on the forward side of the frame and alternating in a transverse direction across the frame with a plurality of bedding plates. Mounted on the central portion of the frame and depending therefrom are a plurality of pairs of planter disks which are fed with seeds to be planted from seed hoppers mounted on the upper side of the frame. The seed hoppers are controlled in their seed feeding function by rotating feeder elements which are rotated in correlation to the speed which which the frame is pulled over the ground by a towing vehicle such as a farm tractor. A herbicide distribution system is mounted on the frame between the plow blades and bedding plates at the forward side of the frame and the planting disks to the rear of these structures, so that a herbicide may be sprayed on top of the formed beds. To the rear of the planting disks, the frame carries a pair of ground engaging gauge wheels which support the frame on the ground and control the depth to which the plow blades and planting disks will penetrate the ground. Suspended from the frame and located rearwardly from the gauge wheels are a plurality of rotatably mounted pulverizing tines which function to fluff and pulverize the soil in the beds. A suitable fungicide distributing system is provided on the frame for feeding a fungicide from hoppers carried on the upper side of the rear portion of the frame to a location in close proximity to the pulverizing tines.

3,742,878
CONTROL FOR SEWING MACHINE

James J. Byrne, Easton, Conn.; Francis O. Blackwell, III, Seneca Falls, N.Y., and Richard J. Shokite, Stratford, Conn., assignors to Warnaco Inc., Bridgeport, Conn.

Filed Dec. 7, 1970, Ser. No. 95,834
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 33 Claims

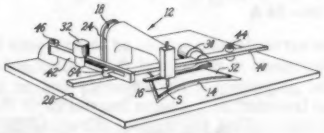


An apparatus and method for the stitching of a pattern in which material is moved relative to a stitching location in accordance with the X and Y coordinates of the stitching path, with the stitching tool being rotated on its axis at the stitching location in accordance with a trignometric function of the corresponding X and Y coordinates of the stitching path. The movement of the material in accordance with the X and Y coordinates of the stitching path steers the work relative to the stitching tool at the stitching location while the rotation of the stitching tool in accordance with the trignometric function of the corresponding X and Y coordinates of the stitching path continuously maintains the stitching tool in the appropriate orientation or heading relative to successive portions of the stitching path.

3,742,879
AUTOMATIC WORK GUIDANCE MECHANISM

Hans F. Schaefer, Jr., Rockport, and Reade Williams, Hamilton, both of Mass., assignors to USM Corporation, Flemington, N.J.

Filed Dec. 3, 1970, Ser. No. 94,772
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 2 Claims

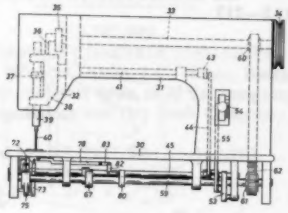


An apparatus for automatically guiding sheet material substantially in its own plane and relative to an operating zone by numerical control. The work, for instance a flexible fabric to be stitched in a sewing machine along a predetermined path, is moved in precise directional increments the X and Y components of which are imparted between tool strokes or needle insertions by coacting motive means in a non-rectilinear coordinate system. Low inertia is attained by a movable work supporting or clamping structure wherein a pivotal Y-arm carries a motor for moving an X-arm about its pivot, and the pivotal X-arm carries a motor for moving the work clamp and work radially relative to the X-arm pivot. A pulse generator coupled to the machine embodying the invention, illustratively a sewing machine devoid of conventional work feeding means such as a dog, provides multiple pulsing per revolution of a main crankshaft, and a pulse counting means signals each motor to yield an intermittent feed each controlled step of which is accelerated-decelerated between selective, variable dwells.

3,742,880
DOUBLE CHAIN STITCH SEWING MACHINE HAVING COMPOUND FEEDING MEANS

Ludwig Franz, Kaiserslautern, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed Feb. 17, 1972, Ser. No. 227,137
Claims priority, application Germany, Feb. 22, 1971, P 21 08 309.0
Int. Cl. D05b *1/10*
U.S. Cl. 112—199 4 Claims

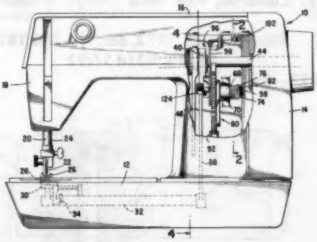


Double chain stitch sewing machine in which the needle and the hook always assume in their loop pickup position the same position relative to one another for all adjustable stitch lengths which is achieved in that the adjusting element of the setting device for the stitch length is in driving connection with the feed eccentric so that in the position of the components of the machine which corresponds to the loop pickup position of the hook and the needle no rotation of the rocking shafts takes place as the adjusting element is moved along its setting position.

3,742,881
STITCH LENGTH REGULATOR

Martin W. Heine, Summit, and Edward J. Tullman, Union, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,543
Int. Cl. D05b *27/22*
U.S. Cl. 112—210 6 Claims



A stitch length regulator for a sewing machine having a feed regulating guide block secured to and pivotably movable with a stud shaft journaled in a bushing in the machine casting. A feed regulator control dial is mounted on the bushing so that its pivot point is common with the feed regulator slide block. A feed regulating control lever is pivotably mounted in the machine and engages a drive pin on the guide block. A follower on the control lever is received in a radial slot having inner and outer cam contours formed in the dial. The contours

of the cam correspond to reverse and forward stitch lengths respectively and the follower is biased so as to normally engage the outer cam contour for forward stitching. The control lever includes an arm projecting externally of the machine housing with a reversing knob at the free end thereof. Manual rotation of the feed dial causes the control lever to pivot in relationship to the location of the follower on the outer cam track to control the disposition of the feed regulator guide block. Reverse stitch is obtained by depression of the reversing knob so that the follower is forced to ride on the inner cam contour to effect a reverse stitch length equivalent to the forward stitch length previously selected.

3,742,882

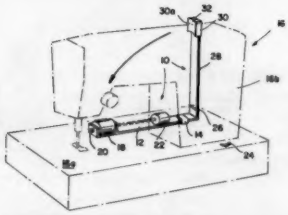
SEAM PRESSER

Ruth M. Wren, 2638 Vincente St., San Francisco, Calif.

Filed July 7, 1972, Ser. No. 269,647

Int. Cl. D05b *35/00*; D06f *65/00*

U.S. Cl. 112—217 **9 Claims**



A simple and compact garment seam pressing apparatus which is used in conjunction with a conventional sewing machine. A pressing head and a roller, one being mounted for pivotal motion with respect to the other, mate and cooperate so as to press a seam after it is sewn. The presser may be manufactured for attachment to and detachment from an existing sewing machine, or constructed integrally within an otherwise conventional sewing machine. The roller may be motor driven and the pressing surface may be electrically heated. The placement of the invention at the sewing machine allows the user to press a seam without leaving the sewing machine. The body of the sewing machine is used to shield the user from inadvertent contact with the pressing head, thereby eliminating the danger of burns.

3,742,883

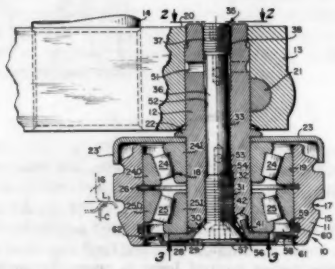
ADJUSTABLE BEARING LOCK AND LUBRICATION SEAL FOR CAN SEAMER

Samuel P. Costanzo, 926 West Evelyn Avenue, Sunnyvale, Calif.

Filed May 25, 1972, Ser. No. 256,787

Int. Cl. B21d *51/32*

U.S. Cl. 113—24 **10 Claims**



Adjustable bearing and locking means for a free turning seam forming rollers of a can closing machine including a pair of tapered roller bearings between the seaming roller and its pin mount together with threaded bearing retaining and clamping screw and means for looking the same in adjusted position relative to the pin and lowermost race of the tapered roller bearings.

3,742,884

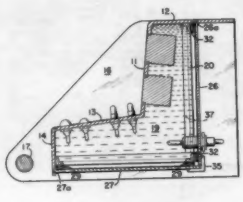
BUOYANCY TRANSPORT VEHICLE CONTROL CONSOLE

Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,304

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 R **9 Claims**



A submersible control console having an instrumentation panel and a switching panel is protected by a pair of side panels and a gripping bar lying across the front of the console. A removable back panel and a removable bottom panel orthogonally disposed provide complete access to the console's interior for inspection and servicing of the instrumentation and switches and are held in place to the console interior by a single angle element. Thus, failure is minimized since there are no threaded bolts and correspondingly tapped bores exposed to the corrosive marine environment along these lines. Filling the housing with a dielectric oil and having a diaphragm at the console-water interface renders the console impervious to fluctuating ambient pressures. The compact size of the control console provides a diver-operator with localized, accessible switches and instrumentation matrices for controlling a buoyancy transport vehicle and the console's design protects it from damage and accidental actuation of the switches.

3,742,885

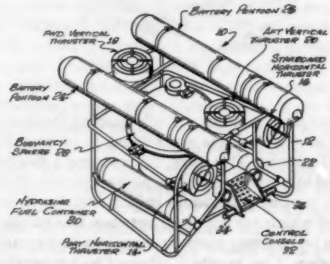
DIVER OPERATED HAND CONTROL SYSTEM FOR AN UNDERWATER VEHICLE

Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 24, 1971, Ser. No. 183,501

Int. Cl. B63c *11/46*; G05g *9/04*

U.S. Cl. 114—16 A **10 Claims**



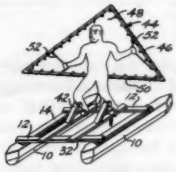
A hand control system for operating starboard and port horizontal thrusters and forward and aft vertical thrusters of an underwater diver operated vehicle. The hand control

system includes starboard and port handgrips, each handgrip being mounted on the vehicle for pivotal up and down swinging movement and rotation about its longitudinal axis. Each handgrip has a horizontal thruster cam in a vertical plane which is perpendicular to the longitudinal axis of the handgrip and operable by rotation of the handgrip, and a vertical thruster cam lying in a vertical plane which includes the longitudinal axis of the handgrip and operable by a swinging movement of the handgrip. These cams in turn operate upon cam followers when the handgrip is swung and/or rotated to selectively actuate the horizontal and vertical thrusters in on, off, or reverse modes.

3,742,886
CATAMARAN

John N. Dillon, 3022 Dorian Drive, Toledo, Ohio

Filed Aug. 2, 1971, Ser. No. 168,054
Int. Cl. B63b *1/100*; **A63c** *15/04*
U.S. Cl. 114—61 **4 Claims**

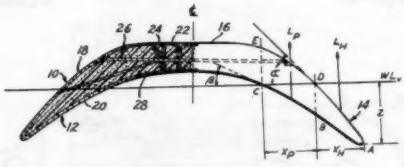


A pontoon water craft, the pontoons of which are connected together by a parallelogram linkage. The sailor of the craft stands upon the parallelogram linkage carrying a hand sail, and steers the craft with his feet by shifting the linkage. A rudder is affixed to the parallelogram linkage, so that movement of the parallelogram linkage turns the rudder.

3,742,887
SURFACE WATERCRAFT

Diana Russell, 167 E. 99 St., Apt. A-1, New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,016
Int. Cl. B63b *1/00*
U.S. Cl. 114—61 **5 Claims**



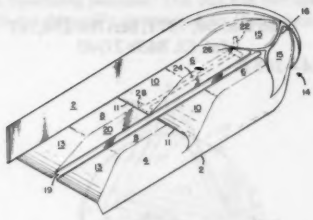
A general wing form to be used as a stabilizer for watercraft or as a double hulled craft in itself. It is comprised of two buoyant foil or hull elements and a connecting beam, and characterized by its integral structure, its anhedral configuration and its particular use of static and dynamic left forces for stability.

3,742,888
STABLE MULTIPLE-CHAMBER AIR CUSHION BOAT HULL

Walter A. Crowley, Tower 801, 801 Pine St., Apt. 14 A, Seattle, Wash.

Filed Dec. 30, 1971, Ser. No. 213,979
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **8 Claims**

A soft riding, stable multiple-chamber air cushion boat hull having a plurality of high pressure air chambers around the periphery automatically providing heave stability as well as roll and pitch stability. The hull may further include a vent slot providing a means for exhausting the spill out of the continuously charged high pressure chambers and further makes a



sharp reduction in the bow wave pressure. In addition to providing stability the high pressure chambers lift the boat providing a low friction, soft riding air cushion support.

3,742,889
METHOD OF CONSTRUCTING SHIPS

Gary V. Weise, Newport; Richard C. Moore, Hampton, and James C. Sweat, Newport News, all of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

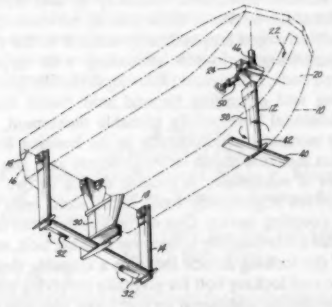
Filed July 15, 1971, Ser. No. 162,901
Int. Cl. B63b *3/00*
U.S. Cl. 114—65 R **3 Claims**

Method of constructing ships, at yard level as contrated with constructing ships within a dock. The method includes building individual sections at yard level, longitudinally aligning and advancing the sections towards a semi-graving dock, pivoting the ships sections from yard level onto the inclined grade of the semi-graving dock, integrating by welding the sections with respect to each other and as a ship within the semi-graving dock, and launching the ship stern first from the semi-graving dock.

3,742,890
FREE TRAILING FORWARD HYDROFOIL STRUT

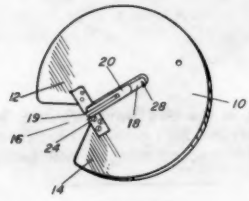
Robert M. Hubbard, Kent, and Philip C. Whitener, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 9, 1971, Ser. No. 178,974
Int. Cl. B63b *1/28*
U.S. Cl. 114—665 H **10 Claims**



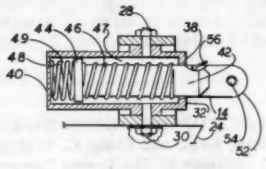
A fully submerged foil type hydrofoil craft having aft mounted strut means and a single forward strut. The forward strut is swivelably mounted to the hull in a free trailing uncontrolled arrangement, limited only by suitable damping means.

3,742,891
DISC ANCHOR
Frank Diorio, Crescent Drive, R.D. No. 1, Lake Hopatcong, N.J.
Filed Dec. 30, 1971, Ser. No. 214,167
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 R 11 Claims



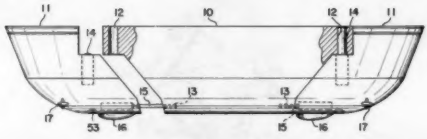
A disc type anchor for holding projectile emplaced marine mines. The disc anchor has a pair of flukes separated by an elongated slot which rotatably holds therein a torque arm. The flukes lie in a plane directed opposite to each other and on opposite sides of the plane of the rear area of the disc. The torque arm is bimodal and is restrained from forming an angle with the disc plane of more than 150° with either side of the disc. The bimodality of the disc anchor permits it to return to a flush digging alignment with a water bed whenever it has been upended.

3,742,892
UNIVERSAL COUPLING DEVICE
Werner F. J. Freitag, 3 Albert Road, Longdown Estate, Somerset, Republic of South Africa
Filed Oct. 26, 1971, Ser. No. 192,121
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R 10 Claims



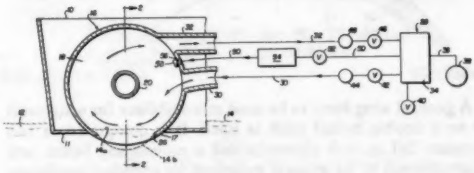
A coupling device of two aligned halves: a vertical half comprising a sleeve slidably and rotatably mounted on a vertical member for relative movement vertically up and down and turnably horizontally in two of three axes of movement; and a horizontal half arranged longitudinally normal to the vertical half and comprising a hollow mounting with oppositely disposed flared ends, a horizontal housing vertically pivoted in said mounting and extending beyond said flared ends for providing additional horizontally turnable movement, and a rod rotatably mounted longitudinally in the housing for relative movement turnable about its longitudinal axis, the last of the three axes of movement. A locking device of two halves has its two halves respectively fixed to adjacent ends of the halves of the coupling device. One of the halves of the locking device includes a horizontally transverse locking bolt, and the other half of the locking device includes a closable slot complementary to said locking bolt for pivotally receiving said bolt and thereby providing additional up and down turnable movement. The rod is also longitudinally slidable in the casing and is oppositely biased by springs therein to dampen stresses imposed in the direction of tow on the respective halves of the coupling device and included locking device. A take-up reel and an eye are respectively mounted on the separate halves of the coupling device and a fairlead provided therebetween for help in aligning the coupling device halves. The coupling device thus makes double provision for movement in two of the three axes of movement and single provision in one of the axes.

3,742,893
WATER-JET PROPULSION AND STEERING SYSTEM FOR A MULTI-SECTION PRIME-MOVER SHIP
William Stelling, 175 W. 72nd St., New York, N.Y.
Filed Apr. 14, 1972, Ser. No. 244,079
Int. Cl. B63h *11/04*
U.S. Cl. 115—12 R 13 Claims



A multi-section, prime-mover ship comprising at least one nonpropelled, cargo-carrying body section, hydraulically coupled to a pair of prime-mover end sections which are propelled by a water-jet propulsion and steering system. Rotatable water jets, turnable through an angle of 360°, are coupled to a high-pressure water pumping system, which produces a high velocity stream of water which is ejected from the rotatable water jets to steer and propell the ship.

3,742,894
DRIVE MEANS FOR A VESSEL
James R. Palma, 1502 Curry Road, Schenectady, N.Y.
Continuation-in-part of Ser. No. 39,299, May 21, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,413
Int. Cl. B63h *14/02*
U.S. Cl. 115—15 5 Claims

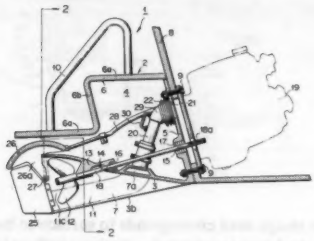


A drive means for a vessel comprising a circular or spherical housing adapted to be partly submerged in a body of water, the circular or spherical housing defining an air circulating chamber connected to a source of air under pressure, the housing is provided with an opening located in that portion of the housing which is submerged in the body of water to form a continuously replenished air bubble located below the housing under the water line of the body of water; and blower means are provided between the source of air under pressure and the air circulating chamber to continuously circulate air under pressure through said chamber along a gyratory path and over the opening to create a friction force or drag on the surface of the water exposed at the opening to thereby propel the vessel through the body of water.

3,742,895
PROPULSION DEVICE FOR BOATS

Kotaro Horiuchi, Hamamatsu, Japan, assignor to Yamaha Hatuskoki Kabushiki Kaisha, Shizuokaken, Japan

Filed July 7, 1971, Ser. No. 160,447
Claims priority, application Japan, July 8, 1970, 45/68214
Int. Cl. B63h *1/14*
U.S. Cl. 115—34 4 Claims

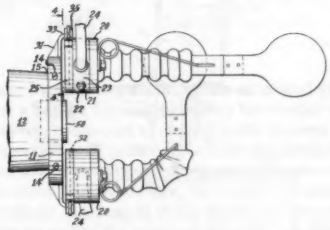


A propulsion device for boats wherein a boxlike housing is mounted on the transom of a boat; the bottom of the boxlike housing defines an inclined cavity having an inverted U-shaped cross section and a progressively increasing depth toward the rear end; there is disposed a propeller in said inverted U-shaped section to increase propulsion efficiency; and a footboard is detachably fitted on the upper portion of the boxlike housing.

3,742,896
MOUNTING DEVICE FOR LOW PRESSURE TIRE INDICATING MECHANISMS

Mark J. Perry, Box 187, Star Route, Fort George, Fla.

Filed Apr. 13, 1971, Ser. No. 133,623
Int. Cl. B60c *23/04*
U.S. Cl. 116—34 R 10 Claims



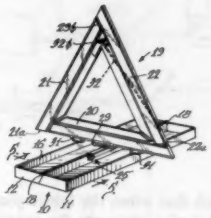
A mounting device to attach the mechanism to a vehicle axle hub including a ring member telescoped around the hub and spaced set screws to releasably connect the member to the hub. An element is spaced outwardly of the member which extends into a passageway in the mechanism base and means are provided to releasably maintain the element in the passageway.

3,742,897
REFLECTOR SIGNAL MARKER FOR HIGHWAY USE

Elmo L. Meek, and Richard E. Kinder, both of Wichita, Kans., assignors to Miro-Flex Company, Inc., Wichita, Kans.

Filed May 16, 1972, Ser. No. 253,824
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P 7 Claims

A triangular reflector signal marker for highway use which meets standards of the National Highway Safety Bureau for such devices. A folding reflector signal marker is mounted in a box which provides a storage container for the folded signal marker and which serves as the base for the signal marker in its erected, operating position. The box has two identical portions which are hingedly connected so that when the box is

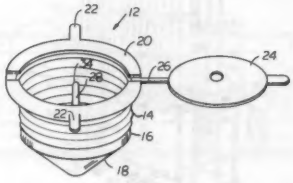


open the body panels of the box portions are coplanar and may rest on a supporting surface. A first pivotal connection permits the signal marker to be moved from a position within the box to a position above and parallel to the long dimension of the box, and a second pivotal connection permits the signal marker to be turned across the box in operating position.

3,742,898
PRESSURE INDICATING BUNG WITH SELF-LOCKING INSERTION FEATURE

Augustine A. Souza, San Jose, Calif., assignor to Robert N. Noyce, Los Altos, Calif.

Filed Aug. 10, 1972, Ser. No. 279,314
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 11 Claims



A bung in which the side walls are relaxed upon insertion into a bung hole, as in a beer barrel, but which subsequently become compressed when pressure in the barrel or similar vessel pushes against a bottom wall connected to the side wall, compressing the side wall with bellows action, thereby forcing corrugated side wall edges into contact with the bung wall. Pressure on the bottom wall forces the bottom wall upward so that an elongated member attached to the bottom wall raises as the bottom wall is raised, thereby indicating the extent of pressure on the bottom wall.

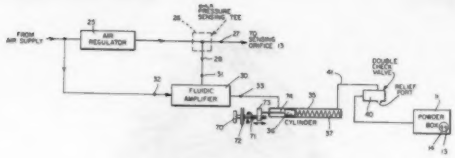
3,742,899
POWDER MARKER

Joel M. Alperin, Scranton, and James P. Murphy, Pittston, both of Pa., assignor to Triple A Trouser Manufacturing Co. Inc., Scranton, Pa.

Filed Sept. 23, 1971, Ser. No. 183,180
Int. Cl. B05c *1/16*
U.S. Cl. 118—2 8 Claims

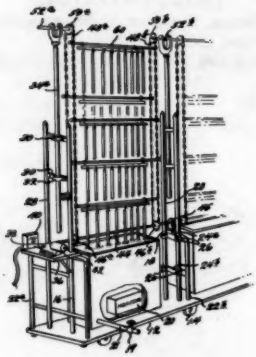
A marking device is disclosed for producing a powder mark upon a fabric piece when it is positioned against the device, having sensing orifice which normally projects a flow of low pressure air, the positioned fabric piece obstructing the low pressure flow and thereby causing a back air pressure which is sensed and amplified, the amplified air signal activating a

cylinder which produces a pulse of compressed air which is communicated to the interior of a powder box. The power box houses a supply of marking powder and contains, on the front face thereof, the sensing orifice and an immediately adjacent



marking port, such that when the fabric piece is positioned at the marking port it also obstructs the sensing orifice, causing an exact amount of powder to be expelled out of the port and to be impinged upon the fabric at the point desired to be marked.

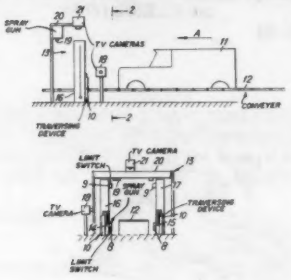
3,742,900
CANDLE DIPPING MACHINE
Emmanuel G. DeKavallas, 1525 E. Diamond, Phoenix, Ariz.
Filed Nov. 5, 1971, Ser. No. 195,983
Int. Cl. B05c *11/14*
U.S. Cl. 118—6 **5 Claims**



A wick dipping apparatus includes a pair of vertically extending endless chains disposed above a pool of molten wax. A plurality of spaced, wick holding rod elements are supported between said chains. One rod of longer extent is operatively associated with a counter means. Means drive the chains whereby to periodically dip the wicks and actuate the counter.

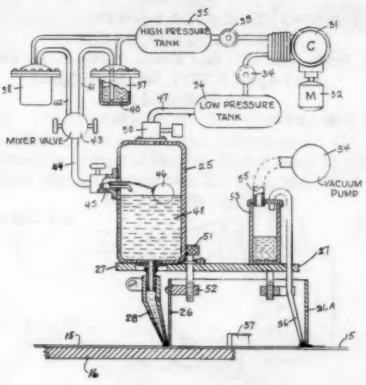
3,742,901
METHOD AND APPARATUS FOR APPLYING COATING MATERIAL TO A SURFACE
Edward Johnston, Chertsey, England, assignor to Carrier Engineering Company Limited, London, England
Filed Nov. 5, 1971, Ser. No. 195,914
Claims priority, application Great Britain, Nov. 30, 1970, 56,747/70
Int. Cl. B05c *11/00*; H03k *17/00*
U.S. Cl. 118—8 **21 Claims**

Coating apparatus comprises a coating device for applying coating material to the surfaces to be coated, means for moving the coating device so that the coating material is applied in strokes extending across the direction of movement of the articles, a television camera arranged to form an image of the surface to be coated over the length of the coating strokes so that the image is scanned in the same direction as the coating strokes, synchronizing means for indicating when the part of the scanning path is synchronized with the position on the surface on which the coating device is operative at any instant, detector means responsive to electrical signals from the television camera to detect throughout the scanning sequence



whether the image seen corresponds to surface to be coated or not, and control means responsive to the synchronizing means and detector means to control the operation of the coating device in dependence on the image seen by the television camera.

3,742,902
PLATELESS PRINTING DEVICE
Russell G. Heston, Jr., Little Silver, N.J., assignor to Donald Desky, Palm Beach, Fla.
Filed Mar. 4, 1971, Ser. No. 121,004
Int. Cl. B05c *5/02*
U.S. Cl. 118—50 **8 Claims**

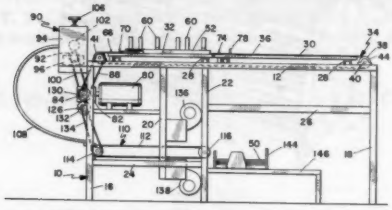


A printing means for depositing ink or dye onto a web of cloth, paper, or plastic material. The web is moved under an ink reservoir and a quantity of ink is deposited on the web. A scraper limit blade removes most of the ink but permits small quantities of ink to remain on the web forming design patterns. Double limit blades and means for mixing colored inks on the web create a large variety of designs.

3,742,903
APPARATUS FOR PUNCHING AND COATING PRINTING PLATES
Robert E. Wheaton, San Diego, Calif., assignor to Copley Press, Inc., La Jolla, Calif.
Filed June 24, 1971, Ser. No. 156,414
Int. Cl. B05c *1/02*
U.S. Cl. 118—37 **10 Claims**

Apparatus for punching and coating printing plates, such as used in the printing of newspapers and magazines. Un-

prepared plates are moved individually in steps to a punch position where coded slots or holes are punched at the edges of the plate in precise alignment, after which the plate passes between devices for application of a photo sensitive coating. The punched and coated plates are conveyed between air



dryers and deposited in a stack in a receptacle. For simplicity and compactness, the plates are guided in a return path on two levels and a single motor drives all of the plates handling means. The apparatus will handle single or double plates of multiple sizes without the need for adjustment.

3,742,904

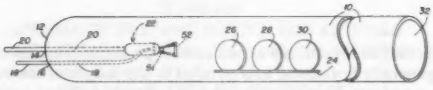
STEAM GENERATOR AND GAS INSERTION DEVICE

Wayne R. Bishop, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 3, 1971, Ser. No. 149,721

Int. Cl. B44d *1/00*

U.S. Cl. 118—48 **9 Claims**



A device for inserting steam, steam saturated gases, or dry gases into a heated furnace tube may be located in the tube and selectively connected to gas and water sources by an automated valve system. The device includes a container having an outlet and a first opening through which a water conducting pipe is inserted. A porous filter, for converting water from the pipe into steam, is arranged in the interior of the container intermediate an end of the pipe and the outlet. A blocking plate is positioned external the container and near the outlet to prevent liquid water from reaching a work object within the tube. A second pipe may be inserted through a second opening into the interior of the container for introducing either steam saturated or dry gases into the furnace tube.

3,742,905

STRIPPING EXCESS COATING LIQUID FROM MOVING STRIP MATERIAL

Austin Cedric Marks, Mount Pleasant, and Harold Vivian Cirson, Bulli, New South Wales, both of Australia, assignors to John Lysaght (Australia) Limited, Sydney, New South Wales, Australia

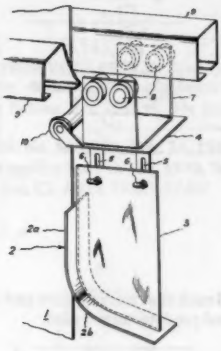
Filed Aug. 3, 1971, Ser. No. 168,721

Claims priority, application Australia, Aug. 13, 1970, 2189

Int. Cl. B05c *11/06*

U.S. Cl. 118—63 **8 Claims**

To prevent lateral displacement of excess coating liquid during gas jet stripping upon exit of a coated strip from a coating bath, baffles are provided at each edge of the strip adjacent the stripping gas nozzles, the baffles being urged



towards the strip edges but restrained by followers in contact with the strip edges.

3,742,906

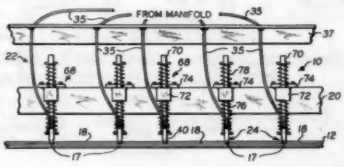
GROOVE COATER

William H. Dupke, Seattle, Wash., assignor to U. S. Plywood-Champion Papers Inc., New York, N.Y.

Filed May 21, 1970, Ser. No. 39,465

Int. Cl. B05c *11/02*

U.S. Cl. 118—105 **6 Claims**



Groove coating apparatus includes a block-like device adapted to ride within a groove. The device has a coating material receiving chamber, a dispensing aperture at a forward portion of the block within the groove. The following portion of the block is configured to dispense the dispersed coating material onto the side walls of the groove. Means bias the dispersing means onto the bottom wall of the groove.

3,742,907

APPARATUS FOR INVERTING AND COATING A WORKPIECE

Jurg Steffen, Zurich, and Arnold Hofer, Muttenz, both of Switzerland, assignors to Watch Stones Co., Ltd., Berne and Turlabor AG, Zurich, Switzerland

Division of Ser. No. 12,691, Feb. 19, 1970, Pat. No. 3,656,988. This application June 17, 1971, Ser. No. 154,037

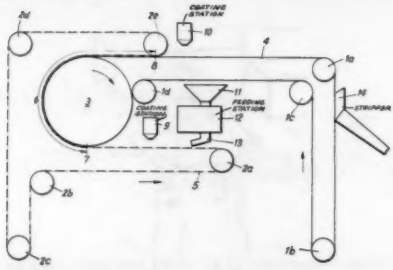
Claims priority, application Switzerland, Feb. 27, 1969, 2951/67; Feb. 27, 1969, 2956/69

Int. Cl. B05c *5/00*

U.S. Cl. 118—314 **3 Claims**

An apparatus for producing holes in a workpiece by means of a laser beam and for coating both sides of disc-shaped workpieces which incorporates two band members guided above one another at a spacing along a predetermined path. This spacing of the band members is smaller than the height of

the workpieces. One of the band member has a smooth surface and the other an adhesive surface, and two coating loca-



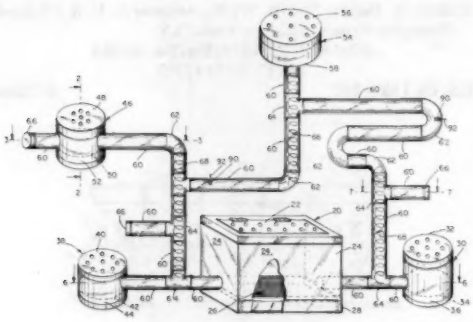
tions are arranged such that one is before and the other behind the aforementioned predetermined path.

3,742,908

ANIMAL HABITAT

Dennis H. Merino, Harbor City, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 30, 1971, Ser. No. 138,934
Int. Cl. A01k *1/00*
U.S. Cl. 119—15 **19 Claims**



An animal habitat comprising at least one housing for confining an animal in captivity and for permitting an animal to perform natural bodily functions while in captivity. Transparent tubular members are provided for simulating natural burrowed tunnel array extending in ascending-descending relation as are coupling members for permitting selectively the assembling, disassembling and rearranging of the transparent tubular members universally. The transparent tubular members which extend in ascending-descending relation are internally provided with climbing elements for enabling an animal to climb axially therealong. The climbing elements may be generally of helical extent and of substantially lesser transverse dimension than that of the transparent tubular members wherein the climbing elements are disposed.

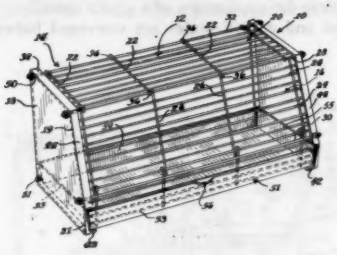
3,742,909

CAGE FOR PETS AND THE LIKE

Bernard Yellin, 5252 S. Kolmar Avenue, Wilmette, Ill.

Filed Feb. 4, 1972, Ser. No. 223,647
Int. Cl. A01k *3 1/08*
U.S. Cl. 119—17 **3 Claims**

A cage for pets and the like having a cage body with a slidable and removable tray at the bottom of said cage body, with one of the upright members of the cage body being of a reduced height and provided with a movable gate at the lower end thereof, which movable gate when lowered extends the height of said upright member to substantially the height of the other upright sides of the cage body but which gate when



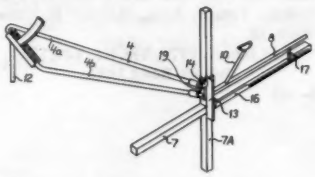
elevated permits withdrawal and/or removal of the tray from the cage body while trapping the animal or bird within the cage.

3,742,910

GATE FOR ANIMAL ENCLOSURE

Michael John Ridding, Battle, England, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jan. 3, 1972, Ser. No. 214,766
Int. Cl. A01k *1/00*
U.S. Cl. 199—27 **4 Claims**



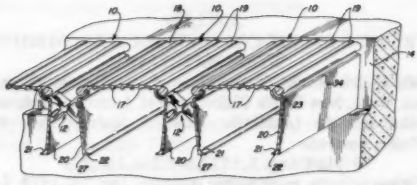
A barrier is mounted at one end for pivotal movement about a generally horizontal axis parallel to the length of the enclosure and can be swung on this axis between a closed position, wherein the barrier extends transversely across the enclosure, and an open position where it is clear of the enclosure. A rod extending parallel to the length of the enclosure is journalled for rotation about its own axis and is coupled to the barrier, the rod being rotatable to open and close the barrier by means of an arm secured to the rod and extending radially therefrom at a point spaced along the rod from the barrier.

3,742,911

SLATTED FLOORING CONNECTOR SYSTEM

Russell B. Lehe, Park Ridge, Ill., and Richard L. Torbett, Akron, Ohio, assignors to Norandex, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 219,312, Jan. 20, 1972. This application Sept. 13, 1972, Ser. No. 288,513
Int. Cl. A01k *1/00*
U.S. Cl. 119—28 **5 Claims**



A lightweight, easily-assembled slatted flooring system for an animal enclosure comprising a plurality of channels inter-

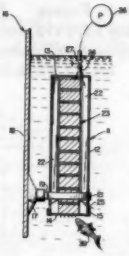
connected in spaced-parallel relationship by X-shaped connectors, each connector having arcuately-shaped ends extending from two of its legs which engage similarly shaped grooves in the upper, outer corners of each channel.

3,742,912

AUTOMATIC FEEDER FOR AQUATIC ANIMALS

David T. Y. Chen, and Ten Fuh Shih, both of c/o T. C. Huang & Associates, 592 Lin Shen North Rd., Taiwan, China

Filed July 7, 1971, Ser. No. 160,372
Int. Cl. A01k *61/02*
U.S. Cl. 119—51 R 13 Claims



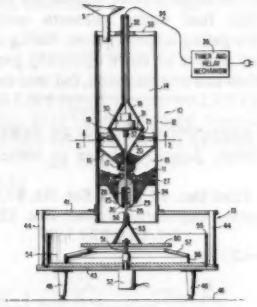
An automatic fish feeder in the form of an open bottom tube containing an elongated layered body of fish food, a feed access screen across the tube bottom supporting the food body which descends by gravity as it is consumed. The tube interior is pressurized to limit the column of water therein to moisten only the lower end of the food body, either by introducing a gas under pressure from an external source, or by producing gas under pressure from the moistened food body.

3,742,913

AUTOMATIC FEEDING DEVICE FOR ANIMALS

Huston D. Crippen, Esmont, Va., assignor to Coleswood Products, Inc., Esmont, Va.

Filed Mar. 8, 1972, Ser. No. 232,698
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 6 Claims



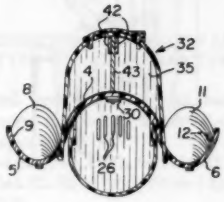
A feeding device for automatically dispensing feed to animals at regular predetermined intervals comprising an activating unit which includes an upper feed material receiving hopper having baffle means mounted therein and a discharge opening at the bottom leading to a feed material measuring and dispensing compartment having a dispensing outlet at the bottom for discharging feed therefrom. Valve means are reciprocally operable to alternately open and close the discharge opening and the dispensing outlet. A rotating turntable having a cone-shaped dispersing means centrally thereof is positioned underneath the compartment to receive feed discharged therefrom and distributes the feed outwardly to a feed trough surrounding the turntable. A suitable timer mechanism is provided to automatically actuate the valve means and the turntable to dispense feed at regular predetermined intervals.

3,742,914

COMBINATION BIRD SHELTER AND FEEDER

Joseph T. Spencer, deceased, late of Mount Morris, Mich., and by Charles Nelson, Jr., 2515 S. Dye Road, Flint, Mich. (administrator)

Division of Ser. No. 805,985, Feb. 24, 1969, Pat. No. 3,505,975. This application Feb. 25, 1970, Ser. No. 13,979
Int. Cl. A01k *39/00, 31/00*
U.S. Cl. 119—52 4 Claims



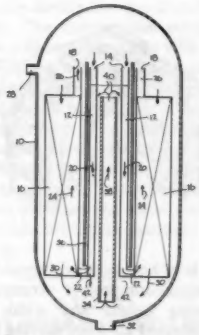
A bird feeder having an undulating canopy member having a pair of upwardly concave portions spaced by a central, upwardly convex portion, the terminal ends of each of the upwardly concave portions being bent upwardly to form food troughs. A food reservoir is mounted atop the canopy having openings therein through which food may be supplied automatically to the troughs.

3,742,915

HEAT EXCHANGERS

Toshio Meshii, Kobe, Japan, assignor to Atomic Power Development Associates, Inc., Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,143
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 3 Claims



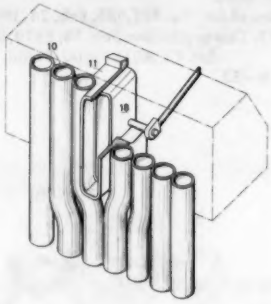
A heat exchanger having vertically disposed downcomer tubes connected at the bottom to vertically disposed spaced riser heat transfer tube bundles, shrouding forming a first vertically extending independent channel and a second independent channel surrounding downcomer tubes so that a portion of the heating fluid can flow upwardly in the first channel and thence downwardly around said downcomer tubes in the second channel by natural circulation.

3,742,916

ARRANGEMENT FOR CLEANING AN AIR PASSAGE IN THE WALL OF A REFUSE BURNING FURNACE

Jacob Erland Magnus Wessberg, Torslanda, and Kjell Edvard Ingmar Astrom, Stenungsund, both of Sweden, assignors to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden

Filed Nov. 12, 1971, Ser. No. 198,382
Claims priority, application Sweden, July 1, 1971, 92/71
Int. Cl. F22b *37/48*
U.S. Cl. 122—390 **4 Claims**



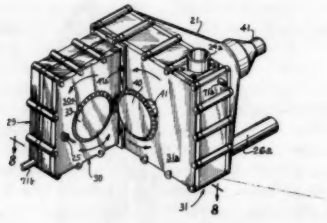
The passages in the wall of a refuse burning furnace for supplying combustion air thereto run an apparent risk of being clogged by particles of solid matter carried by the combustion gases. In order to remove such deposits a sleeve is fitted into the each passage, and is connected to a driving means designed to impart a reciprocatory forwards and backwards movement thereto. A scraper ring may be fitted inside the sleeve to support the pushing out action, and air for cooling purposes may be supplied to the clearance between the wall of the passage and the sleeve.

3,742,917

SINGLE WANKEL DIESEL ENGINE-COMPRESSION IN CROSS-PORTED HORIZONTAL TANDEM

Tony W. Butler, Jr., 242½ Portland Place, Houston, Tex.

Filed June 21, 1971, Ser. No. 154,771
Int. Cl. F02b *41/02, 53/08*
U.S. Cl. 123—8.05 **6 Claims**



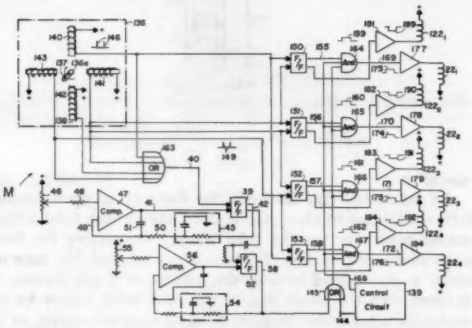
The disclosure is of horizontally disposed in tandem, single Wankel diesel engine-compressor arrangements, with compressor determining height and width dimensions, and whereby the compressed air from moving compression space in engine driven compressor passes through substantially horizontally or laterally disposed transfer port means into oppositely moving engine compression space for fuel injection and ignition to occur therein, whereby products of combusion pass back into compressor, through substantially horizontally or laterally disposed transfer port means, substantially vertically spaced from said first transfer port means, into compressor expansion space to abet compressor rotation into communication with exhaust discharge; the engine drive shaft being exteriorally adapted to drive the compressor shaft in opposite clock direction, as aforesaid. The arrangement of engine and compressor in horizontal tandem relationship, with air inlet into compressor, followed by ported intercommunication into, and back from engine, and finally by discharge from compressor, providing combinations adapted for substitution into conventional vehicle power plants, thus requiring less headroom than required by conventional Wankel diesel engine-compressor combinations.

3,742,918

ELECTRONICALLY CONTROLLED FUEL-SUPPLY SYSTEM FOR COMPRESSION-IGNITION ENGINE

Fernand Murtin, Loic Mercier, and Jean Barat, all of Paris, France, assignors to Societe Industrielle d'Electronique et d'Informatique, Paris, France

Filed May 13, 1970, Ser. No. 36,814
Claims priority, application France, May 14, 1969, 6915592
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **6 Claims**



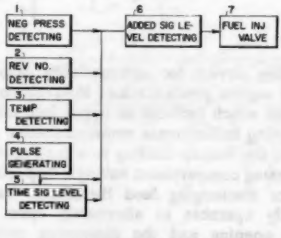
One or more cylinders of a compression-ignition engine are connected to respective supply conduits through control valves normally spring-biased into a closed position. A feed pump periodically delivers fuel under pressure, from a reservoir, to a distributing channel leading to the supply conduit or conduits, this channel also having a return conduit for each cylinder with a bypass valve closed during all or part of the compression stroke of the pump. The closure of this bypass valve, during a gating interval established by an electronic network, causes a pressure buildup in the supply conduit sufficient to open the control valve against the force of its loading spring so that fuel under pressure enters the injector throughout the gating interval whose timing and duration may be determined by one or more operating parameters, such as throttle position and engine speed, fed into the network.

3,742,919

INJECTION TYPE FUEL FEEDER

Seiji Suda, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,885
Claims priority, application Japan, Dec. 12, 1969, 44/99435
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 EA **11 Claims**



An injection type fuel feeder for automotive vehicles in which the injection time of the fuel is computed on the basis of

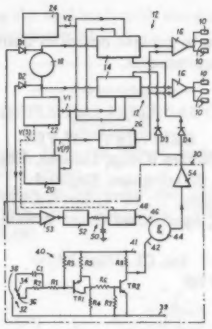
conditional signals from the engine, which include engine revolutions per minute, temperature, etc., in combination with a saw-tooth current, characterized in that the rate of change of the saw-tooth current is controlled in accordance with the engine manifold negative pressure and the temperature of the engine, whereby compensation of the engine output and temperature can be accomplished in proportion to the other conditional signals.

3,742,920

FUEL INJECTION SYSTEMS

Terence Sidney Black, Rouge Val, Torteral, Guernsey (Channel Is.), assignor to Brico Engineering Limited, Coventry, Warwickshire, England

Filed Sept. 27, 1971, Ser. No. 184,010
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **9 Claims**



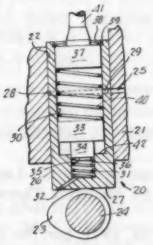
A fuel injection system for an internal combustion engine has at least one electromagnetically operable fuel injection valve and a pulse generator circuit arranged to produce electrical pulses for energising the valve so as to open it for a period dependent upon the duration of the pulse by which it is energised. The system inlcudes an overrun control circuit which is responsive to an engine overrun condition and having a timing circuit connected to be started by overrun responsive means and arranged to inhibit the operation of the pulse generator for a predetermined time interval after the start of an engine overrun condition or until the overrun condition ceases.

3,742,921

VARIABLE LIFT HYDRAULIC VALVE LIFTER

Michael J. Rendine, 4161 Leafback Place, Dayton, Ohio

Filed July 23, 1971, Ser. No. 165,642
Int. Cl. F01l *1/24*
U.S. Cl. 123—90.16 **6 Claims**



A hydraulic valve lifter which has its effective length varied by application of the varying hydraulic pressures of the engine lubricating oil so that the effective length of the lifter is the least at low speed and the greatest at high speeds. The effective length of the hydraulic lifter varies the lift and consequently the duration of lift of the valves so that at high speeds the valves open wider and stay open for a greater percentage of each cycle of the engine. The hydraulic lifter has a cylindrical central bore in which are positioned free pistons arranged to receive lubricating oil under pressure therebetween. The higher the pressure the greater the distance the pistons will be separated until a maximum separation is attained. One of the pistons engages the bottom of the bore in the lifter while the other engages the lower end of the push rod. The two pistons are freely movable in the bore and also provide a cushioning connection between the lifter and push rod.

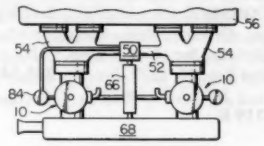
In a modified form of the invention, the upper piston is ported to provide lubricating oil to the push rod and the valve stem.

3,742,922

MULTI CARBURETOR SYSTEM OF VARIABLE AREA VENTURI TYPE WITH AUXILIARY FUEL SUPPLY SYSTEM

Takashi Hisatomi, and Kenichi Sasaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 10, 1972, Ser. No. 233,603
Int. Cl. F02d *9/00*; F02m *13/04*
U.S. Cl. 123—97 B **8 Claims**



An auxiliary fuel supply system for use in a multi carburetor system of the variable area venturi type for an internal combustion engine of a motor vehicle. The auxiliary fuel supply system consists of a body having formed therein a main mixture passage, a slow running mixture circuit and a deceleration circuit. The main mixture passage is connected to intake manifolds of the engine. The slow running mixture circuit has a slow running port communicating with the main mixture passage for supplying the engine with an air-fuel mixture of optimum air-fuel ratio during low speed and light loud operations of the engine. The deceleration mixture circuit has a deceleration port which communicates with the main mixture passage for supplying the engine with an air-fuel mixture of optimum for decelerating condition of the engine. The auxiliary fuel supply system also consists of a control unit having diaphragm means responsive to an intake manifold vacuum of the engine and a valve element attached to the diaphragm means and extending into the deceleration circuit to open and close the deceleration port, the diaphragm means being moved to a position to cause the valve element to open the deceleration port when the intake manifold vacuum reaches a predetermined value.

3,742,923

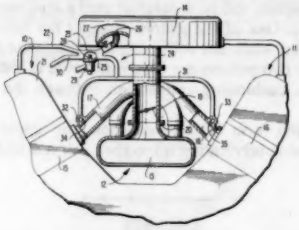
MULTI-CYLINDER INJECTION INTERNAL COMBUSTION ENGINE

Kurt Oblander, Rommelshausen, and Ludwig Fricker, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed July 21, 1971, Ser. No. 164,504
Claims priority, application Germany, July 21, 1970, P 20 36 045.6
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 B **17 Claims**

A multi-cylinder injection-type internal combustion engine in which idling air is conducted to the cylinders in bypassing

both the control valve adjusting the quantity of air in the suction manifold as also the individual suction pipes leading from the suction manifold to the individual cylinders; with the use of a by-pass vent line for venting the crankcase, which ter-



minates in the suction line system, the by-pass vent line is connected to the idling air line system either in or upstream of the point of distribution to the individual idling air pipes connected with the individual suction pipes near the connection of the latter with the individual cylinders.

3,742,924

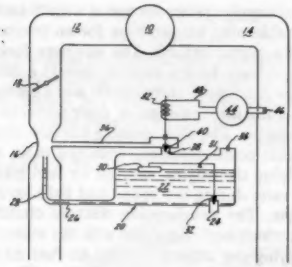
CONTROL OF AIR-FUEL RATIO

Carl F. Bachle, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 24, 1972, Ser. No. 228,943

Int. Cl. F02m *7/12, 7/16*

U.S. Cl. 123—119 R **1 Claim**



A device for controlling the air-fuel ratio in an internal combustion engine wherein the rate of fuel flow from the float chamber to the air stream in the venturi of a carburetor is modified by a pressure modifying tube joining the float chamber and the venturi, a valve in said tube being responsive to the thermal conductivity of the exhaust gases in the exhaust pipe of the engine.

3,742,925

TIMING MECHANISM FOR ENGINES

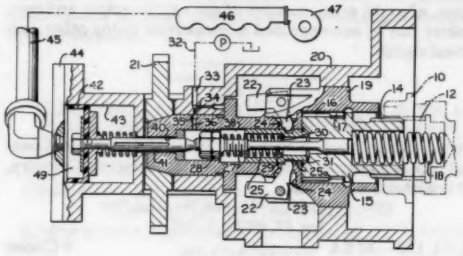
Phillip B. Gordon, Jr., Washington, and Gerald Edward Whitehurst, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 19, 1971, Ser. No. 163,648

Int. Cl. F02m *39/00*

U.S. Cl. 123—139 AQ **5 Claims**

Two embodiments of a device for automatically timing joined to fuel injection in a turbocharged internal combustion engine, one the injection timing being varied by a mechanism responsive to engine speed and also by a pressure-actuated mechanism responsive to engine load. The speed sensing mechanism acts separately or in combination with the load



sensing mechanism to achieve optimum timing in accordance with the engine requirements.

3,742,926

DELIVERY VALVES

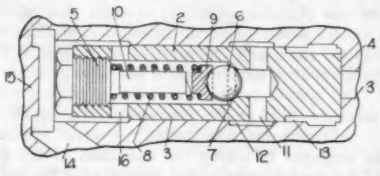
Kenneth Albert Walters Kemp, London, England, assignor to C.A.V. Limited, Birmingham, England

Filed Aug. 27, 1971, Ser. No. 175,510

Claims priority, application Great Britain, Aug. 27, 1970, 41231

Int. Cl. F02m *39/00*

U.S. Cl. 123—139 DP **5 Claims**



A delivery valve for a fuel injection pumping apparatus includes a body portion which is slidable within a bore between a pair of abutments. The bore forms part of a passage between an injection pump and an injection nozzle and the member is provided with a valve which when the member is moved under the action of fuel into contact with one of the abutments opens to permit flow of fuel from the injection pump to the nozzle. When the flow of fuel from the injection pump ceases the valve closes and the member moves back towards the other abutment under the action of fuel under pressure in the pipe line connecting the injection pump with the nozzle. A predetermined volume of fuel is therefore allowed to flow from the pipe line towards the injection pump.

3,742,927

VALVE FOR AN INTERNAL COMBUSTION ENGINE OR THE LIKE

Karl Walter Kuhn, Saint-Germain-En-Laye, France, assignor to Societe D'Etudes De Machines Thermiques, Saint-Denis, France

Filed May 26, 1971, Ser. No. 147,045

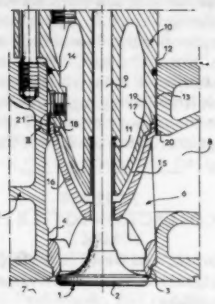
Claims priority, application France, May 27, 1970, 7019362

Int. Cl. F01l *3/00*

U.S. Cl. 123—189 **6 Claims**

An internal combustion engine valve, of the type comprising a body forming a valve guide and a cage forming a remova-

ble valve seat adjacent to the said body, which are mounted in the cylinder head, characterized by a detachable connecting



device assembling the said body with the said cage and made from a heat-resisting material.

3,742,928

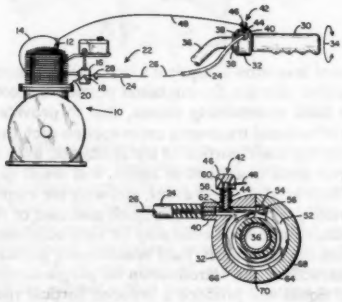
SAFETY THROTTLE FOR INTERNAL COMBUSTION ENGINES

Robert V. Albertson, Wayzata, Minn., assignor to Zeal Corporation, Excelsior, Minn.

Filed May 30, 1972, Ser. No. 257,828

Int. Cl. F02b *77/08*; B60k *33/00*; F02d *11/04*

U.S. Cl. 123—198 DC **4 Claims**



A safety device for a throttle of the type which regulates a carburetor gas flow valve by means of a throttle cable fixedly connected at one end to a throttle lever and at its other end to a gas flow control valve and in which the cable normally moves reciprocally in a passageway as the throttle lever moves between open and closed positions. An ignition circuit safety switch is provided and safety switch control means are provided in the passageway out of contact with a cable moving in normal reciprocable fashion. For abnormal cable movement, however, the cable is distorted in the passageway causing the cable to strike the safety switch control means whereupon the safety switch operates to shut off or otherwise disable the engine controlled by the throttle. In one embodiment, the safety switch control means is also manually moveable into contact with the cable irrespective of the cable position or movement to provide for manual shutting off of the engine.

3,742,929

HOT WATER AND HOT AIR HEATING SYSTEM

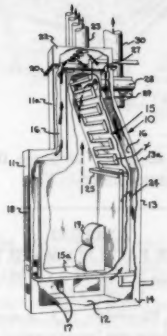
Raymond R. Dupler, 744 Euclid Avenue, Toledo, Ohio

Filed Nov. 26, 1971, Ser. No. 202,133

Int. Cl. F24c *3/04*

U.S. Cl. 126—133 **1 Claim**

A furnace for supplying hot water and/or hot air heat for room heating purposes. A sheet metal combustion chamber containing a gas fired log is viewed through a shatterable glass window, this chamber being spaced from a housing affording passages for air to be heated from the walls of the combustion chamber. These passages lead to a plenum chamber on the top portion of the furnace. Within the combustion chamber, and arranged to receive the maximum benefit of the heat from the gas log, is a hot water pipe arranged in serpentine manner. The



top of the combustion chamber is closed and the products of combustion pass to the outside through pipes at opposite ends of the combustion chamber which extend through the walls of both the combustion chamber and housing. These pipes are joined outside into a common flue. The hot air passages may be closed by insulation, thereby providing a hot water heating system alone.

3,742,930

PROCESS FOR GENERATING VESICULAR MATERIAL HAVING POROUS, SORPTIVE SURFACE STRUCTURE, AND APPARATUS COATED WITH SAME

Robert E. Ott, Baltimore, Md., assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 817,128, April 17, 1969, Pat. No. 3,580,733, and Ser. No. 67,996, Aug. 28, 1970. This application Apr. 8, 1971, Ser. No. 132,555

Int. Cl. A21b *1/00*

U.S. Cl. 126—19 R **3 Claims**

In the formation of vesicular, matte or semi-matte material useful for imparting continuous cleaning properties to a food cooking oven wherein an admixture of a frit-containing enameling composition and particulate elemental aluminum, magnesium, a high alloy of either, or a mixture of same is fired, increased surface area of said vesicular material can be generated by incorporating into said admixture an additional proportion of copper, manganese, vanadium, iron, nickel, cobalt, chromium, or mixtures of same.

3,742,931

DEVICES FOR HEATING OR COOKING FOODS

William Milton Bardeau, 44 Princess Margaret Boulevard, Islington, Ontario, Canada

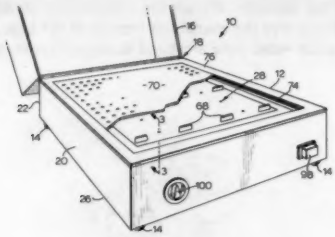
Filed Dec. 28, 1971, Ser. No. 212,907

Int. Cl. A47j *27/04*

U.S. Cl. 126—369 **8 Claims**

The invention relates to appliances for processing foods by the use of steam using, in the conduit system for supplying water from a pressure source, a length of capillary tube calibrated to deliver water at a flow rate sufficient only to generate the volume of steam necessary to achieve optimum conditions of temperature and moisture content in the food processing compartment and using a distensible reservoir in combination with the capillary tube responsive to variations in

pressure to automatically accumulate a charge of water when the appliance is shut down to provide a surge of water at the



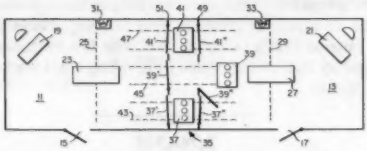
start-up of the next sequence to purge the food processing compartment of the atmosphere.

3,742,932

MEDICAL OFFICE FACILITY WITH TWO OR MORE EXAMINING ROOMS HAVING A COMMON EQUIPMENT CORE AREA

Donald J. Greenspan, Riverside, N.J., assignor to U.S. Medical Research and Development Incorporated, Riverside, N.J.

Filed July 24, 1970, Ser. No. 57,981
Int. Cl. B61j *1/00*
U.S. Cl. 128—1 R **11 Claims**



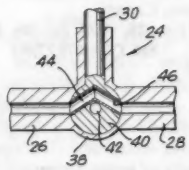
A building construction and method of use thereof wherein equipment for use in two or more rooms is contained in a core area common to the rooms and conveyed therein in a manner to maintain isolation between the rooms. In a preferred embodiment, a medical facility is provided for the examination of patients wherein at least two patient examining rooms have a common equipment core area adjacent to both examining rooms. Equipment pods containing medical equipment for given various medical specialties are contained in the core area and are accessible from each examining room, thereby increasing equipment utilization.

3,742,933

DEVICES FOR CONTROLLING FLUID FLOW IN LIVING CREATURES

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,141
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **4 Claims**



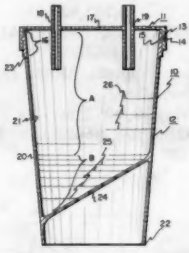
A device for controlling the flow of fluid in a living creature. The device has an inlet and outlet both of which are mounted fluid-tightly in a body cavity in a position compelling the fluid which is to be controlled to flow into said inlet before reaching the outlet. Between the inlet and outlet there is a control structure which in one position provides for flow of fluid in a given condition through the inlet and the outlet and which in another position prevents the flow of fluid in this given condition through the inlet and outlet. This control structure can provide for fluid flow at all times while chemically treating the fluid to prevent it from having a given condition, or the control structure can in one position cut off the flow of fluid and in another position reestablish the flow of fluid.

3,742,934

BODY FLUID COLLECTION BOTTLE FOR PEDIATRIC USE

Legrand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Continuation of Ser. No. 859,849, Sept. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,294
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 F **1 Claim**



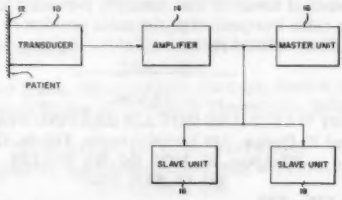
The present invention comprises a body fluid collection bottle construction wherein the container portion thereof is provided with fluid constraining means, this to provide a container area of reduced transverse cross-section such that an initial filling of the lower portion of the container, even as to introduction of small quantities of liquid, will result in a rapid rise in the fluid level. In such event, and with the employment of appropriate graduation indicia, small amounts of fluid initially introduced into the bottle may be very accurately measured. Above the lowermost, fluid constraining portion of the bottle construction, the introduction of progressively larger amounts of liquid will produce a reduced vertical rise in the fluid level of the upper portion of the bottle construction.

3,742,935

PALPATION METHODS

Lee R. Baessler, Manhattan Beach; James G. Gerard, La Palma; Harvey F. Glassner, Los Angeles, all of Calif., and T. James Waters, Bethesda, Md., assignors to Humetrics Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 862,653, Oct. 1, 1969, abandoned. This application Jan. 22, 1971, Ser. No. 108,720
Int. Cl. A61b *5/02, 5/10*
U.S. Cl. 128—2 R **16 Claims**



A method for simultaneous palpation by a plurality of individuals in which the physical displacement of a sensor may

be amplified and simultaneously reproduced at a plurality of remote locations. The physical displacement signal from a transducer in pressural engagement with the patient's skin is amplified and utilized to drive a palpation platform which is tactually engaged by the physician to aid in the diagnosis. Additional palpation platforms may be slaved to the physician's unit and the slave units utilized for instruction purposes. The palpation platform may include a speaker cone substantially filled with a solid material and covered by a material approximating human skin. The method may take the form of a physician's diagnostic aid, or as a medical teaching aid. Use, including self-instruction, of the equipment for speech therapy is also disclosed.

3,742,936

RHEOPLETHYSMOGRAPHIC DEVICE AND METHOD OF OPERATION

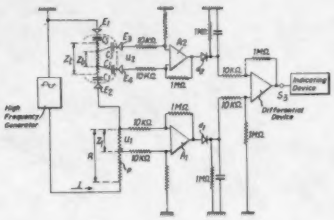
Jean Marie Michel Paul Blanie, 282 rue Saint Jacques, Paris, 5e, and Jean Marie Rene Demange, 19 rue de Normandie, Bretigny-sur-Orge (Essone), both of France

Filed Oct. 21, 1970, Ser. No. 82,578

Claims priority, application France, Oct. 23, 1969, 6936333; May 29, 1970, 7019676

Int. Cl. A61b *5/05*

U.S. Cl. 128—2.1 Z **14 Claims**



A rheoplethysmographic device (inductance plethysmograph) comprising a high frequency electric generator of which the voltage is applied to a subject by means of a pair of injection electrodes, characterised by the fact that the injection electrodes are placed in series with at least one current setting impedance interposed between the subject and the generator, at least one pair of collector electrodes being placed on the subject within the zone subjected to voltage by the injection electrodes, the voltage collected between the electrodes of each pair and that collected between one pair of points of a current setting impedance being subsequently led after amplification to a differential device and then to an indicating device for measurement, control recording or transmission, the position of the said pair of points being such that the voltage received between them substantially balances the mean voltage between the corresponding pair of collector electrodes so that after amplification of each of the said voltages and passage through the differential device, the output voltage varies about zero.

3,742,937

CARDIAC MONITOR

Barry Manuel, Lockeland Road, Winchester, Mass., and Harvey L. Pastan, 60 Shaw Road, Chestnut Hill, Mass.

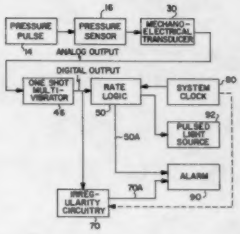
Filed Jan. 20, 1971, Ser. No. 107,959

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 T **4 Claims**

The monitoring device is self-contained, compact and is preferably strapped about the wrist over the region where a radial pulse is normally detected. Heart rate and abnormalities in the heart beat rate are sensed by the device. Because no external connections are necessary to a power source, for example, the device is particularly useful for ambulatory patients suffering from various types of heart ailments.

A pressure sensitive diaphragm sensor is held against the skin over the radial pulse region to sense the pulse wave transmitted from the heart. This pressure sensor couples to a mechano-electrical transducer which converts the pressure pulse into an electrical analog pulse. A multivibrator, or the like, couples from the transducer and is used to square (digitize) the analog pulse. Logic circuitry receives a digital



heart pulse from the multivibrator and is adapted to detect when the heart rate is either below a minimum predetermined rate or above a maximum predetermined rate. When either of these conditions exists an alarm signal is generated. Circuitry may also be included for those patients who may be expected to experience irregularities of the heart beat. This circuitry determines when heart beats have been dropped, for example.

3,742,938

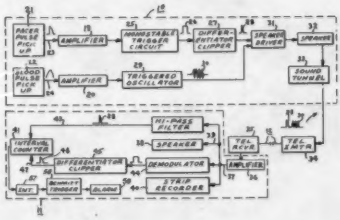
CARDIAC PACER AND HEART PULSE MONITOR

Theodore J. Stern, 84 Sheffield Drive, Willingboro, N.J.

Filed Jan. 4, 1971, Ser. No. 103,611

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 T **22 Claims**



A method of and system for remote cardiac diagnosis of cardiac patients, whether or not fitted with implanted cardiac pacer by use of the ordinary telephone. A small transducer transmitter picks up the patient's blood pulses, and cardiac pacer pulses if present, electrically codes them and sends them in proper time sequence through the ordinary telephone transmitter over the telephone lines to a processing center where the coded signals are checked for presence or absence and for the time intervals between adjacent signals of the same coded type and adjacent signals of different coded types. From this data it is possible to determine the operating condition of the cardiac pacer, non-capture and intermittent capture of the heart by the cardiac pacer, cardio-vascular system hemodynamic changes, and cardiac arrhythmias such as missing heartbeat and possible premature ventricular contraction.

3,742,939

METHOD AND APPARATUS FOR DETERMINING RESPIRATORY AIRWAY RESISTANCE

William J. Sayer, 1618 Willow Road, Palo Alto, Calif.

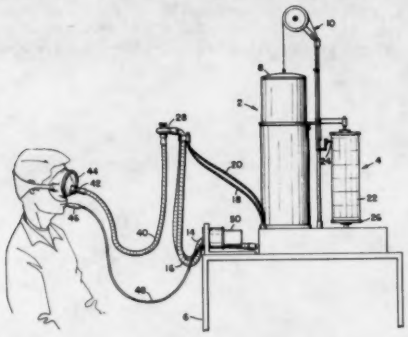
Filed Feb. 24, 1971, Ser. No. 118,280

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **8 Claims**

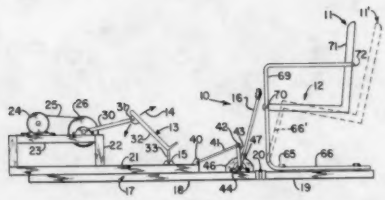
A method and apparatus for determining nasal or tracheobronchial respiratory airway resistance in a person.

The volume of freely breathed air, pharyngeal pressure, and time duration of a breath are measured or recorded. Preferably, a narrow pharyngeal pressure range is chosen to



optimize the validity of the data. Further, the choice of data in which the volume of air breathed per unit time is substantially constant enhances the validity of the data.

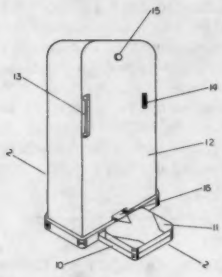
3,742,940
IMPACT PRESSURE THERAPY APPARATUS
Roy O. Phiffer, 1610 West Kentucky, Midland, Tex.
Filed Jan. 17, 1972, Ser. No. 218,314
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R 7 Claims



Exercising apparatus that is especially adapted to impart a particular desirable motion into the lower limbs of an individual who may be suffering from paralysis and certain other muscular injuries or disorders. The apparatus includes a fixed base to which there is captured a sliding base, with the sliding base having an oscillating foot rest located thereon. A seat is resiliently mounted to the fixed base and a control lever is disposed in proximity of a person seated thereon for controlling the location of the foot rest relative to the seat. Reciprocatory motion is used to induce oscillatory motion into the foot rest, while the seat moves in response thereto so as to impart a particular exercising motion into the lower limbs of the patient's anatomy. The severity of the motion induced into the patient's leg is controlled by the patient himself who avoids straining his impaired muscles by positioning the lever to thereby control the amount of force imparted into his body.

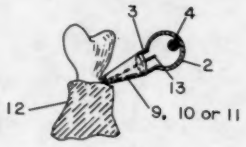
3,742,941
FOOT AND BODY VIBRATOR
Aron J. Aizenstat, 215 East 76th St., New York, N.Y.
Filed May 18, 1971, Ser. No. 144,566
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 3 Claims

A foot and body vibrator having a motor with an eccentric attached to an unsupported end of a platform, the central portion being flexibly mounted to a base, and the other end being secured to or unsecured to the base. Vibrations from the motor are efficiently transmitted through the platform with the assistance of the securement means consisting of hard



rubber member sandwiched between a U-shaped flexible spring and thence a base and platform.

3,742,942
METHOD AND MEANS FOR CLEANSING TEETH AND THEIR GINGIVAL CREVICES
John R. Westline, 600 N. W. 9th St., Delray Beach, Fla.
Filed Mar. 30, 1971, Ser. No. 129,332
Int. Cl. A61h *7/00*
U.S. Cl. 128—62 A 1 Claim



A method and means for cleaning teeth and their gingival crevices constructed on a standard plaster dental model or cast.

Fitted into the plaster cast at locations where x-ray examination and clinical examination indicate periodontal disease are a plurality of stainless steel pins which extend a short distance outwardly from the tooth at an angle. Suitable sleeves of the desired shape and size are positioned on the pins after which soft flexible tubing having a plurality of protuberances is positioned over the sleeves and pins. After the tubing is in position a quick cure acrylic may or may not be interposed between the outer surface of the teeth and the tubing to assure correct positioning of the instrument on or around the teeth.

3,742,943
RHINOPLASTY TREATMENT, METHOD, AND APPARATUS
Oscar Malmin, 127 E. Wayne Avenue, Akron, Ohio
Filed Jan. 3, 1972, Ser. No. 214,614
Int. Cl. A61f *5/08*
U.S. Cl. 128—76 C 8 Claims

A method, and the apparatus for carrying out the method, for post-operative treatment of rhinoplasty patients. The

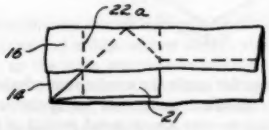
method includes the preparation of a "before" cast of the patient's nose and preparation of an "after" configuration or model of the nose so that the patient can see the expected results. One version of the method includes forming a progressive series of splints of differing contours intended to compensate for the reduction of swelling in the period following surgery, with these splints being formed to conform with the step-by-step models until the ultimate nose configuration is achieved. The method also contemplates securing the splints to the head of the wearer by a headband which would be of the cervical or low pull type so that proper pressure is applied by the splints during the time they are in place without causing discomfort to the wearer. The preferred form of splint contemplates using a universally adaptable form thereby precluding the necessity of "step-by-step" molding as previously stated.

3,742,944

SURGICAL DRAPE

James W. Sease, Greenwood, S.C., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Aug. 21, 1969, Ser. No. 851,852
Int. Cl. A61b *19/06*
U.S. Cl. 128—132 D **5 Claims**



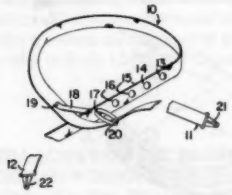
A bag-like surgical drape is provided for covering or isolating objects during a surgical or obstetrical procedure. The drape is folded in a unique way to facilitate unfolding and draping. Front and back panels are folded transversely on the front panel and one end, positioned under a front cuff, is partly exposed by a diagonal fold to provide a hand-grasping area below the front cuff. The cuff is also folded in from the side margin forming a hand-receiving pocket so that the folded drape can be manipulated by means of the pocket and the grasping area to unfold and hold the drape up for positioning the drape aseptically.

3,742,945

RESTRAINING DEVICE

Alberta C. Reinhardt, 1650 California St., San Francisco, Calif.

Filed June 4, 1971, Ser. No. 150,148
Int. Cl. A61f *13/00*
U.S. Cl. 128—134 **6 Claims**



A patient restraining device is provided which is adjustable about a person's waist. The size adjustment is made by passing a loop through a selected eyelet. The free end of a belt is passed through the eye of the loop and the end of the belt may be secured to the patient's bed or other suitable support.

3,742,946

APPARATUS FOR THE IN VIVO TREATMENT OF BLOOD CONTAINING HARMFUL COMPONENTS RESULTING FROM CHRONIC UREMIA AND OTHER CONDITIONS

Charles M. Grossman, 9507 N.W. Roseway Avenue, Portland, Oreg.

Filed May 15, 1970, Ser. No. 37,532
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 R **3 Claims**

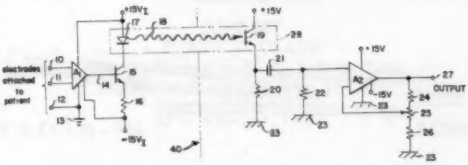
Harmful components resulting from chronic uremia and other conditions are removed from blood by flowing the blood through a conduit comprising a semi-permeable membrane capable of selectively passing bodies of low molecular weight. The conduit has in direct contact with its exterior surface a predetermined quantity of a finely divided solid material capable of reacting with the harmful components. Where the latter result from chronic uremia and include excess water, the finely divided solid material comprises a desiccant, in particular cross-linked dextran. Where the harmful components comprise salicylates, barbiturates and the like, the solid material comprises a solid adsorbent such as charcoal. In either case, the solid material collects the harmful components and thus decreases their concentration in the blood.

3,742,947

OPTICALLY ISOLATED ELECTRO-MEDICAL DEVICE

James F. Hashem, Malden, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 26, 1971, Ser. No. 175,121
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **1 Claim**



An optically isolated electro-medical device. An electronic device is disclosed that is used for monitoring physiological functions of a patient. The device is electrically connected to the patient and establishes electrical isolation from other patient-connected circuitry by optical coupling. The isolation substantially reduces the hazards of electrocuting a hospitalized, bed-ridden patient who may be connected to several different pieces of electro-medical equipment simultaneously. In an illustrative embodiment, the optical coupling includes a light-emitting diode in operative connection with a light-sensing transistor (photo-transistor) and is arranged to minitor the EKG of a patient.

3,742,948

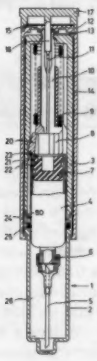
HYPODERMIC SYRINGE WITH RADIALLY MOVABLE BLOCKING ELEMENTS

Hendrik Alle Post, and Daniel Ong, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,332
Claims priority, application Netherlands, Aug. 25, 1969, 6912969
Int. Cl. A61m *5/20*
U.S. Cl. 128—218 F **4 Claims**

A hypodermic syringe comprising a liquid container and a needle connected thereto at one end, which assembly is incor-

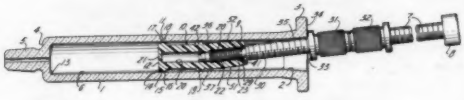
porated in a housing, the liquid container being bounded at the other end by a piston, and an operating mechanism being present to exert a force on the piston, one or more blocking elements being present for locking the operating mechanism or the piston against movement relative to the liquid container, the housing showing a diameter transition such that when the blocking elements pass along it, they are moved radially so that the blocking is removed and the piston penetrates into the liquid container so that the liquid flows out through the needle.



3,742,949
SYRINGE ASSEMBLY

Clifford W. Hill, 8 Summit Place, Pleasantville, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,869
Int. Cl. A61m *5/00, 5/22*
U.S. Cl. 128—218 PA 16 Claims



Syringe with a nonlubricated plunger body having a narrow sealing bearing, a centering bearing, and a rear socket with a bore extending inside said bearings and socket, and a plunger rod having a mounting portion with a tapered end and having sharp ridges which engage said bore.

3,742,950
INFANT FEEDING MEANS

Eugene Sandor Endrody, 36 Kootenay Street, Kitimat, British Columbia, Canada

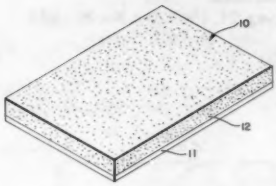
Filed Aug. 16, 1971, Ser. No. 171,826
Int. Cl. A61j *1/00*
U.S. Cl. 128—252 4 Claims

The present invention comprises an infant feeding means, including a bladder portion provided with handle ears operable to fasten said infant feeding means to garments and the like; an entranceway provided at the uppermost end of said bladder having a closure means disposed at the mouth of said entranceway operable to detachably close said entranceway; and a meshed exitway operable to permit the passage of small particles of suitable food, which a small infant can safely ingest, while retaining larger pieces of food; both said bladder and said meshed exitway being made of materials which are firm but resilient.

3,742,951
BANDAGE FOR CONTROLLED RELEASE OF VASODILATORS

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Aug. 9, 1971, Ser. No. 169,977
Int. Cl. A61f *7/02*
U.S. Cl. 128—268 19 Claims

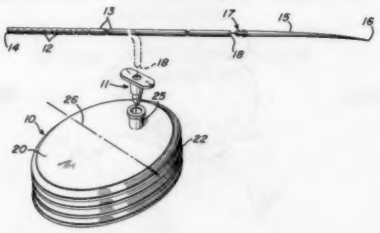


Medical bandage for use in the continuous administration to circulation of controlled quantities of systemically active coronary vasodilators over a prolonged period of time by absorption through the external body skin or mucosa is comprised of a backing member, a pressure-sensitive adhesive coating, and a reservoir containing the drug confined within a wall member. The wall member is formed from drug release rate controlling material to continuously meter the flow of a therapeutically effective amount of the drug from the reservoir to the skin at a controlled and predetermined rate over a period of time.

3,742,952
SURGICAL SUCTION PUMP ASSEMBLY

Paul E. Magers, Warsaw, and Earl J. Simons, Marion, both of Ind., assignors to Alpha Industries, Inc., Clearwater, Fla.

Continuation-in-part of Ser. No. 633,316, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 327,392, Dec. 2, 1963, abandoned. This application Apr. 28, 1971, Ser. No. 138,236
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 3 Claims



A surgical suction assembly for use in closed wound surgical techniques comprising a bellows of inherently resilient material, a drainage tube for insertion in a wound, and a plug assembly for connecting the drainage tube to the bellows which incorporates a one-way valve arranged to open in response to resilient expansion of the bellows and to close in response to

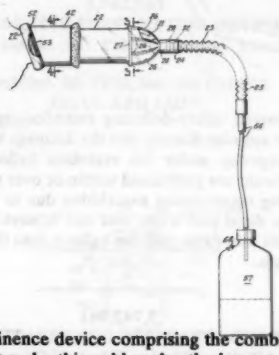
compression of the bellows in order to prevent accidental return to the wound of fluids which have been drained therefrom.

3,742,953

DISPOSABLE MALE URINARY INCONTINENCE DEVICE

John W. Lee, 55, State Veterans Hospital, Rocky Hill, Conn.

Filed May 26, 1969, Ser. No. 827,784
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **7 Claims**



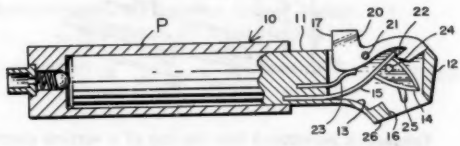
Male incontinence device comprising the combination of a funnel element and a thin rubber sheath element adapted for application to the male member to transmit voiding of urine by the patient with connector means for preventing leakage between said elements. An additional resilient element is provided for retaining the sheath upon the male member.

3,742,954

SNAKE BITE KIT

Frederick W. Strickland, Route No. 2, Box 660, Lot 41, Hob Sound, Fla.

Filed Feb. 22, 1972, Ser. No. 227,730
Int. Cl. A61m *1/00*
U.S. Cl. 128—302 **3 Claims**



A snake bite kit having an elongated handle on one end of which is a lancing device with a poison extractor telescopically mounted along the other end of the handle. The lancing device is provided with a pair of cutting blades mounted on a flat spring with a trigger arrangement for releasing the blades in the cutting action. The poison extractor consists of a tubular member having a valved mouthpiece at one end for creating a suction in order to draw blood and the snake poison from one's flesh.

3,742,955

FIBROUS COLLAGEN DERIVED PRODUCT HAVING HEMOSTATIC AND WOUND BINDING PROPERTIES

Orlando A. Battista, Yardley, Pa.; Mamerto M. Cruz, Jr., Pennington, N.J., and Merritt R. Halt, New York, N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sept. 29, 1970, Ser. No. 76,638
Int. Cl. A61b *17/04*
U.S. Cl. 128—334 R **6 Claims**

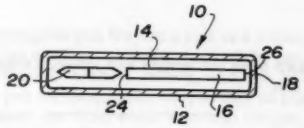
A fluffy, finely-divided fibrous collagen derived product having hemostatic and adhesive properties sufficient to join together severed biological surfaces in a live warm blooded animal when the product is wet with blood between the surfaces. In the preparation of the product, the swelling of the collagen fibers is controlled during wet processing to prevent hornification upon drying and the recovered dry fibrous product is subjected to a deaggregation treatment to provide a mass having a bulk density of not more than 8 pounds per cubic foot and a surface area of at least 1 square meter per gram.

3,742,956

CERVICAL DILATOR

Michael Loss, 1879 Manor Drive, Union, N.J.

Filed Aug. 18, 1971, Ser. No. 172,716
Int. Cl. A61m *29/02*
U.S. Cl. 128—341 **6 Claims**



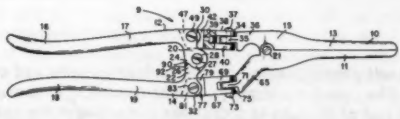
A cervical dilator is provided which is adapted to be fully internally disposed during use. The cervical dilator comprises an expansible chamber defined by an elongated balloon-like member in which is disposed a laminary stick. A sealed capsule is also disposed in the chamber and contains water. The sealed capsule is adapted to be broken by applying pressure to the balloon-like member and contains a predetermined amount of water which will cause the laminary stick to swell to a desired final outer diameter.

3,742,957

SURGICAL CLAMP

Jack H. White, 220 North First St., La Follette, Tenn.

Filed June 22, 1971, Ser. No. 155,479
Int. Cl. A61b *17/08*
U.S. Cl. 128—346 **5 Claims**



A clamp particularly useful in surgical procedures including handle means and jaws, the jaws being adjustable with respect to the handle means.

3,742,958

SUPRAPUBIC CATHETER INSERTER

Charles H. Rundles, 200 Oak N.E., Albuquerque, N. Mex.

Filed Apr. 21, 1971, Ser. No. 136,015
Int. Cl. A61b *17/34;* **A61m** *25/00*
U.S. Cl. 128—347 **3 Claims**

Surgical apparatus for suprapubically inserting a Foley-type catheter into a patient's bladder, including a trocar having a reduced diameter along a portion of its length and a telescopingly removable rigid cannula having a slot cut along its length. After the trocar and cannula have been pierced into the bladder, the trocar is removed and the flexible Foley-type

catheter threaded into place along the length of the cannula. The Foley bag of the catheter is then inflated, and the cannula

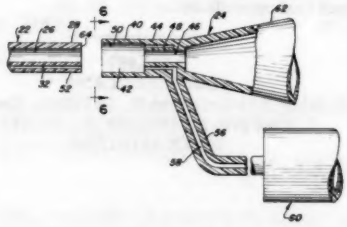
is withdrawn from the wound and stripped from the catheter along the slot.

3,742,959

CATHETER WITH SELF-ALIGNING INFLATION PASSAGE

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 22, 1971, Ser. No. 210,901
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 B **5 Claims**



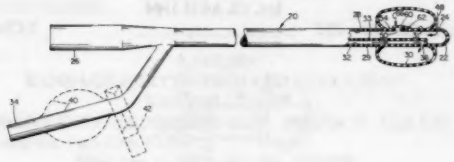
A self-aligning catheter having a drainage tube and connector. The tube has a drainage lumen extending from the proximal end of the tube to a drainage eye adjacent the distal end of the tube, and an inflation lumen in the tube wall extending from the proximal end of the tube to a retention balloon adjacent the distal end of the tube. The connector has an annular sleeve at one end defining a bore of a diameter approximately equal to the outside diameter of the drainage tube, and has an annular shoulder extending from the sleeve defining a drainage lumen. The shoulder has an annular slot extending circumferentially around the shoulder lumen and extending longitudinally in the shoulder from the sleeve bore, and the slot is spaced from the inside surface of the sleeve a distance approximately equal to the distance between the inflation lumen and the outside surface of the tube. The proximal end of the tube is received in the sleeve bore such that the tube and shoulder lumens are aligned with each other, and the shoulder slot and inflation lumen are in communication. The connector also includes an inflation arm extending from the connector and having a passageway communicating with the shoulder slot in order that the arm passageway communicates with the retention balloon through the slot and inflation lumen.

3,742,960

DEFLATABLE RETENTION CATHETER

John F. Dye, and William J. Binard, both of Barrington, Ill., assignors to The Kendall Company, Walpole, Mass.

Filed Oct. 7, 1971, Ser. No. 187,371
Int. Cl. A61m *27/00, 25/00*
U.S. Cl. 128—349 BV **17 Claims**



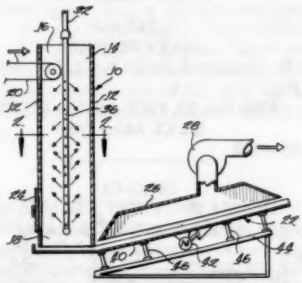
An improved safety-deflating retention catheter wherein the balloon empties directly into the drainage lumen through a short passageway under the retention balloon. Temporary blocking means are positioned within or over the passageway, the blocking means being overridden due to the flexible nature of the distal end when that end is stretched by a force which might otherwise pull the balloon into the urethra in its inflated state.

3,742,961

METHOD AND APPARATUS FOR TREATING TOBACCO

Charles R. Waller, Winston-Salem, N.C., assignor to R. J. Reynolds Company, Winston-Salem, N.C.

Filed Nov. 8, 1971, Ser. No. 196,601
Int. Cl. A24b *03/12*
U.S. Cl. 131—138 **11 Claims**



Tobacco is introduced into the top of a vertical chamber and allowed to fall therethrough by gravity. Steam is simultaneously introduced into the chamber and into contact with the tobacco in order to condition it. The steam treated tobacco falls by gravity from the chamber onto a vibratory conveyor and excess moisture vapor is removed by an exhaust system in association with the conveyor. If shredded tobacco is used, the process effects delamination of the shreds and consequent increase in filling capacity. The process is applicable to treat tobacco leaf prior to de-stemming and de-veining thereby minimizing breakage and the production of fines. Mechanical agitating means may be provided within the chamber.

3,742,962

TOBACCO-DENICOTIZATION PROCESSES

Claude Brochot, Antony (Hauts de Seine), France, assignor to Service D'Exploitation Industrielle des Tabocs et des Allumettes, Paris, France

Filed Mar. 3, 1970, Ser. No. 15,918
Int. Cl. A24b *15/02*
U.S. Cl. 131—143 **11 Claims**

Processes are provided for reducing the amount of nicotine and other desirable agents in tobacco, which processes do not

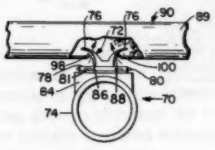
require a final drying stage, and the resulting tobacco products are easy to keep and retain the essence of their physical and gustative qualities. The processes are characterized essentially by successive injections of ammonia gas and steam below atmospheric pressure, which injections are preceded, separated and followed by the drawing of industrial or low vacuums. The tobacco to be treated may be suitable prehumidified, and damp (humid) or dry (non-humid) industrial vacuums may be used at various stages of the processes in order to adjust the humidity of the tobacco as desired.

3,742,963

CIGARETTE PERFORATING DEVICE

Adelene B. Creamer, 137 Palmer Avenue, Mountain View, Calif.

Filed Dec. 28, 1970, Ser. No. 101,711
Int. Cl. A24f *13/22*
U.S. Cl. 131—258 **9 Claims**



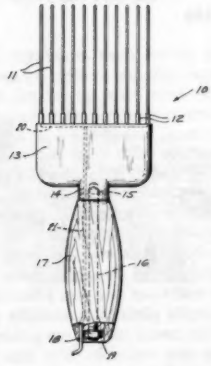
A device for perforating the paper tube or wrapping of a cigarette wherein the device has a perforating member for forming a hole in the paper tube, the member being provided with at least one recessed portion which cooperates with the hole to present a substantially unobstructed airflow passage into the cigarette for permitting air to mix with smoke flowing therethrough when the device is used to hold the cigarette after perforating the same.

3,742,964

HOT PICK COMB

Roberta Newbern, 461 Jefferson Avenue, Buffalo, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,745
Int. Cl. A45d *24/10*
U.S. Cl. 132—118 **4 Claims**



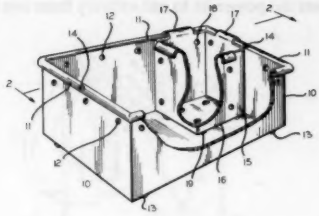
A comb designed to be used when heated, for unsnarling and styling hair.

3,742,965

RINSING DEVICE

Josephine M. Hudziak, 2115 South 35th St., Milwaukee, Wis.

Filed Jan. 21, 1972, Ser. No. 219,769
Int. Cl. B08b *3/04*
U.S. Cl. 134—92 **6 Claims**



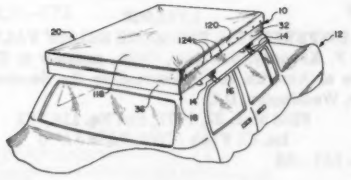
A small rectangular pan fits into a side or a corner of a sink. Over flow holes are formed in the sides of the pan, near the upper edge thereof. Dishes, cutlery, and the like may be placed in the pan for rinsing, and the pan may be placed under a running faucet. As clean water runs into the pan, it fills to the overflow holes and then the rinse level remains stable.

3,742,966

COLLAPSIBLE SHELTER FOR MOUNTING ON A TRANSPORTATION VEHICLE

Erwin F. Franzen, 3673 Randolph St., Lansing, Ill.

Continuation-in-part of Ser. No. 36,709, May 13, 1970, abandoned. This application Mar. 10, 1971, Ser. No. 122,768
Int. Cl. A45f *1/00*; B60p *3/32*
U.S. Cl. 135—1 A **7 Claims**



A collapsible shelter which is mountable on a transportation vehicle and is carried by the vehicle. The shelter includes a rigid receptacle having a substantially flat bottom and a plurality of side walls secured to the outer periphery of the bottom. A pair of parallel support walls is fixed to the bottom interiorally of the side walls. A bow is pivotedly mounted on the support walls. The bow has its axis of pivoting adjacent to one end of the receptacle, and the length of the bow is less than the length of the receptacle to allow the bow to be positioned in the receptacle in a stored position but extend beyond the end of the receptacle in a raised position. A flexible roof is connected to the receptacle and to the bow, whereby the bow releasably supports a portion of the roof above the receptacle and a portion of the roof extends beyond the receptacle.

3,742,967

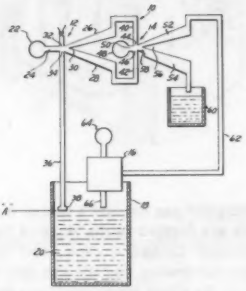
SENSING ARRANGEMENT FOR A FLUIDIC LIQUID LEVEL SENSOR AND CONTROL MEANS

Daniel D. Barnard, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 21, 1970, Ser. No. 99,805
Int. Cl. F15c *1/12*
U.S. Cl. 137—819 **8 Claims**

A fluidic liquid level sensor and control means utilizing "off the shelf" fluidic jet amplifiers as the sensing and control means. This arrangement includes a sensing tube disposed at a selected level in the volume the level of which is to be con-

trolled, with the sensing tube connected to a control port of a sensing jet amplifier having an opposing control port vented in order that the formation of low pressure regions and any resulting wall attachment effects are prevented from occurring, causing the power jet to split equally between two output legs. When the sensing tube outlet is restricted by the liquid in the controlled volume, the low pressure region can occur which causes the power jet to exit entirely from one leg since it



attaches to the wall nearest thereto. A monostable actuation jet amplifier with opposing control ports connected to a respective output leg of the sensing jet amplifier is provided so that when flow is split in the sensing amplifier the actuation amplifier assumes its monostable output, but when the output flow of the sensing amplifier is in a single leg, it is switched to its astable output. The output of the actuation amplifier is disclosed as operating flow control means to thereby control the level of liquid in the volume.

3,742,968

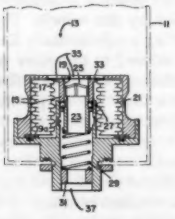
DIFFERENTIAL PRESSURE RELIEF VALVE

Robert F. Kennedy, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1971, Ser. No. 126,752

Int. Cl. F16k *17/40*; B65d *51/16*

U.S. Cl. 137—68 **10 Claims**



A differential pressure relief valve wherein a diaphragm piercing device is actuated by differential pressure through a bellows. The device is self-contained and is installed in the bulkhead of a sealed container. As the pressure inside the container becomes greater than the pressure outside, the bellows compresses to a fixed compressed height of the bellows, and a spring loaded hollow plunger is released and is driven through a diaphragm on the bellows end, thus venting the container to the outside atmosphere.

In one embodiment the bellows and spring biased plunger are interlocked so that the diaphragm is moved against the combined resistance of the bellows and spring. In another embodiment the bellows is compressed independently of the spring.

3,742,969

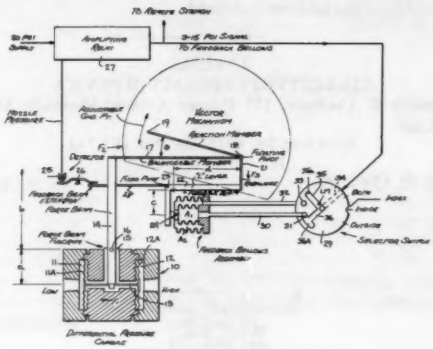
PNEUMATIC FORCE-BALANCE TRANSMITTER

William A. Siegel, Norristown, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Dec. 27, 1971, Ser. No. 212,585

Int. Cl. F15b *5/00*; G05d *16/00*

U.S. Cl. 137—85 **8 Claims**



A pneumatic force balance transmitter in which an input force proportional to the fluid flow rate being measured is applied to a force bar pivoted about a transverse axis to produce a torque. A rebalance torque is applied to the bar by means of a negative feedback loop, in which a pneumatic detector functions to sense any change in bar position, the detector output being amplified to produce a pneumatic output signal that is fed to a bellows assembly to impose a feedback force on the bar in opposition to the input force to an extent tending to hold the bar motionless. The bellows assembly is constituted by a small bellows nested within a larger bellows whereby the feedback force developed by the assembly may be selectively changed in large steps by feeding the output signal either to the small or the large bellows or to both, thereby to effect a coarse change in the operating range of the instrument.

3,742,970

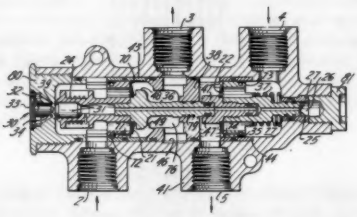
FLOW-SENSITIVE SENSING AND SHUT-OFF DEVICE

Robert I. Gross, Roslyn Heights, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,161

Int. Cl. F16k *37/00*

U.S. Cl. 137—100 **14 Claims**



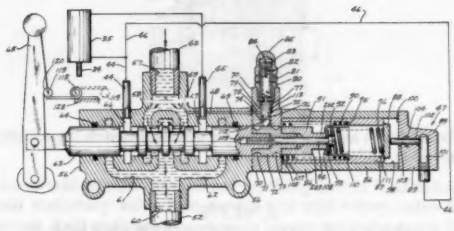
A flow-sensitive sensing and shut-off device is provided, having sensing means responsive to a predetermined flow differential between a first and a second fluid line, to close one or both of the lines, and/or to indicate such flow differential has been reached or exceeded.

3,742,971

APPARATUS FOR CONTROLLING DIRECTION OF MOVEMENT OF A CYCLING FLUID MOTOR

Wayne H. Worthington, 720 Prospect Boulevard, Waterloo, Iowa

Filed June 15, 1972, Ser. No. 263,073
Int. Cl. F15b *11/15, 13/01*
U.S. Cl. 137—106 11 Claims



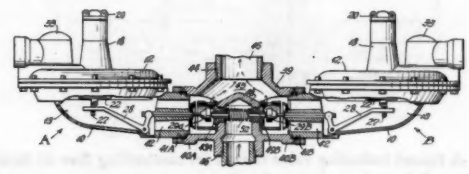
The invention relates to a hydraulic valve fluid connected within a pressure system to a remote, reversible fluid motor which in turn is operable to apply a predetermined amount of force in one direction, then to withdraw the force, to apply it again, etc., the valve initially operated manually and then automatically operable to cycle the motor.

3,742,972

TWIN REGULATOR ARRANGEMENT

George C. Hughes, Anderson, Ind., assignor to Textron Inc., Providence, R.I.

Filed Jan. 3, 1972, Ser. No. 214,930
Int. Cl. F16k *31/12*
U.S. Cl. 137—110 4 Claims



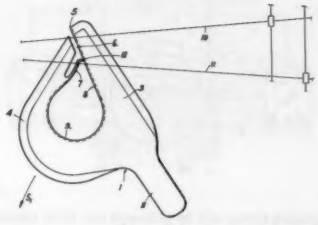
Two gas service regulators each having substantially the same size orifices, which orifices together meet the maximum volume required at the lowest inlet pressure, are connected together by a unitary valve body having outlet and inlet chambers each common to both regulators, each regulator having pressure-responsive means and a valve seat operated thereby, and said valve body having orifice tubes, one for each valve seat, to normally control the flow of gas from said inlet chamber to said outlet chamber, there being in said inlet chamber auxiliary valve means adapted to control the flow of gas from said inlet chamber to said orifice tubes in the event of malfunctioning of either regulator or of foreign matter being lodged between the valve seat and its orifice tube, said orifice tubes being axially slidable and axially aligned, said auxiliary valve means comprising said orifice tubes, and a coil spring interposed between said inlet chamber and said orifice tubes and being compressible to control the flow of gas through its coils to the extent of essentially stopping the flow of gas from said inlet chamber to said orifice tubes in the event of malfunctioning of the regulator or regulators.

3,742,973

GUIDING COMB TOOTH FOR AIR JET LOOMS

Karel Kakac, Brno, Czechoslovakia, assignor to Vyzkumny d vyvojovy ustav Zavodu vseobecneko strojirenstvi, Brno, Czechoslovakia

Filed Feb. 8, 1972, Ser. No. 224,418
Int. Cl. D03d *47/28*
U.S. Cl. 139—127 P 7 Claims



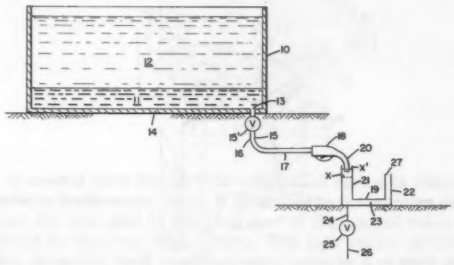
A guiding comb tooth for air jet weaving looms, the body of which comb tooth forks into a straight part and an arcuate part, such parts together forming a substantially circular picking aperture for the weft thread and leaving an exit slot for the weft thread from the picking aperture; the exit slot is closed at its entrance by flat spring means fixed on the arcuate part of the comb tooth and leaning against the internal wall of the straight part of this comb tooth.

3,742,974

APPARATUS AND METHOD FOR STORING TWO-PHASE LIQUIDS

Ross E. Phillips, Pasadena, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,220
Int. Cl. F16t *1/00*
U.S. Cl. 137—172 6 Claims



A method and apparatus for storing two-phase liquids of different densities in a storage tank whereby the higher density liquid may be drained from the tank and the change in densities when the lower density liquid appears is sensed thus, automatically stopping the draining off of the liquids.

3,742,975

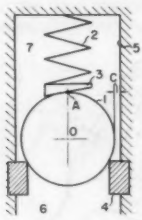
SPRING BIASED BALL VALVE WITH ROTATING DEVICE

Toshio Kazama, and Kazunori Seki, both of Nagaoka, Japan, assignors to Tamagawa Kikai Kinzoku Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 83,071, Oct. 22, 1970, abandoned. This application June 23, 1972, Ser. No. 265,674
Claims priority, application Japan, July 13, 1970, 45/61265
Int. Cl. F16k *15/04*
U.S. Cl. 137—331 7 Claims

A ball-valve mechanism comprising essentially a hollow ball valve of a specific gravity of from 2.5 to 4, a valve seat, and a

valve guide is further provided with an automatic ball-valve rotating device comprising a valve-pressing member, a spring continually pressing the valve-pressing member against the valve and thereby urging the valve toward the valve seat, and an appreciable clearance between the valve and the valve



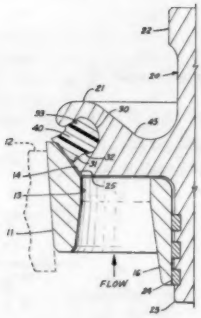
guide, the surface of the valve-pressing member thus contacting the valve being inclined, that is, not being perpendicular to the axial centerline of the valve seat but being at an angle of from 8° to 24° relative to a plane perpendicular to the axial centerline of the valve seat, and the degree of unbalance of the ball valve being less than 3.6 percent.

3,742,976

VALVES

Stuart L. Bailey, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.

Filed Nov. 9, 1971, Ser. No. 197,066
Int. Cl. F16k *15/06*
U.S. Cl. 137—516.29 **7 Claims**



A pump valve including a seat ring having a conically tapered seat and a valve closure member having a unitary, circular disc adapted to carry an elastomeric seal ring in a groove in the disc periphery to engage the seat. The groove having upper and lower surfaces to fit and to support the seal ring and to key it to the valve disc. The outer periphery of the seal ring may have a double taper to cushion the sealing operation and to provide longer life for the valve.

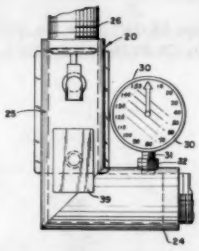
3,742,977

PIPE MOUNTING BRACKET FOR PRESSURE TANK

Reuben Broneske, Underwood, N. Dak.

Filed June 14, 1971, Ser. No. 152,667
Int. Cl. F16k *37/00*
U.S. Cl. 137—557 **2 Claims**

The invention comprises an L-shaped pipe mounting bracket for pressure tank. The pipe bracket has an L-shaped configuration and is adapted to be mounted to the outlet pipe of a pressure tank. The pipe bracket has a plurality of mount-



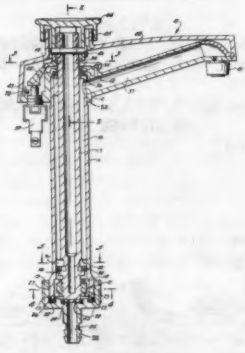
ing bores on its legs for mounting a pressure switch, a pressure relief valve, and a pressure gauge.

3,742,978

FAUCET FOR BOTH PRESSURIZED AND NON-PRESSURIZED WATER SYSTEMS

William R. Davenport, Brick Town, and William D. Jones, Point Pleasant, both of N.J., assignors to Crowell Designs, Inc., Point Pleasant, N.J.

Filed Dec. 14, 1971, Ser. No. 207,747
Int. Cl. F16k *1/00*
U.S. Cl. 137—565 **7 Claims**



A faucet including valve means for controlling flow of fluid through it, and an electrical switch responsive to operation of the valve means for controlling the pressure of fluid between the fluid supply and the faucet inlet. The faucet has a tubular body and a shaft movable axially within the body. A screw thread relationship is provided between the shaft and the faucet body so that initial shaft movement to close or open the inlet to the body is produced by rotating the shaft. The threadably engaged parts may be separated so that the shaft can be manually shifted axially within the body, without simultaneously rotating the shaft, so as to produce a pumping action.

3,742,979

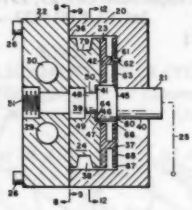
ROTARY VALVE DEVICE HAVING A PLURALITY OF CONTROLLED WORKING PASSAGES

George V. Woodling, 22077 Westlake Road, Rocky River, Ohio

Filed Mar. 2, 1972, Ser. No. 231,106
Int. Cl. F16k *5/18*
U.S. Cl. 137—625.24 **12 Claims**

Rotary valve device including stationary valve body means having stationary valve face means and rotary valve means having rotary valve face means sealingly engaging said stationary valve face means. Housing means surrounds said ro-

tary valve means and defines therewith external fluid chamber means. Said rotary valve means has internal fluid chamber means and has a plurality of selectable operating positions with respect to said stationary valve body means. Actuating means is provided for actuating said rotary valve means from one selectable position to another. Said rotary valve means in



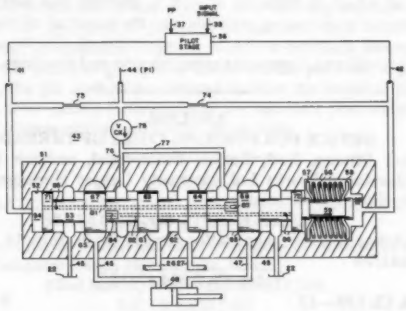
one of said selectable positions blanking flow of fluid between said stationary valve face means and said rotary valve face means. Said stationary valve body means has at least one fluid port means therein. Said stationary valve face means and said rotary valve face means have registerable fluid passage means for selectably connecting said external and internal fluid chamber means in communication with said fluid port means.

3,742,980

HYDRAULIC CONTROL SYSTEM

James Otto Byers, Jr., Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 3, 1972, Ser. No. 240,628
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.62 **9 Claims**



A hydraulic control system including a two stage valve system which is suitable to be used as one of a series of similar valve systems is described. The second or main stage valve is a spool valve which includes an open center passageway, that is, one which, at the center or neutral position of the spool, is open and which is connected as a link in a hydraulic path between a pump and a reservoir. The second stage valve also includes flow control passageways which make the rate of flow of fluid to the load proportional to the rate of flow of fluid through the first stage. The first stage valve may be a spool type valve or a poppet type valve.

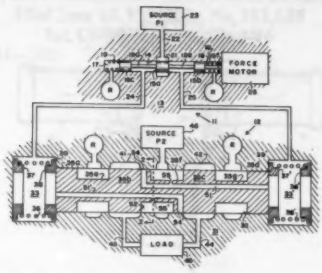
3,742,981

FLOW CONTROL VALVE WITH SINGLE SPOOL SECOND STAGE

James Otto Byers, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 24, 1972, Ser. No. 229,044
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.63 **19 Claims**

A two stage valve system is described in which the rate of flow of fluid to the load depends solely on the input signal to the first stage. Both stages are spool type valves. The second stage is formed to provide a passageway to allow fluid to flow from the first stage to the load, which passageway is opened



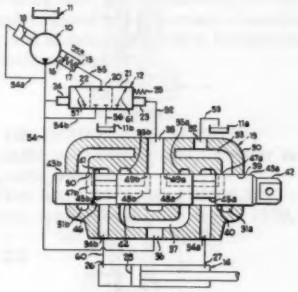
simultaneously with the opening of the usual passageway from the second stage supply to the load. Additionally, the second stage supply is connected through restricted passageways to the second stage end spaces.

3,742,982

CONTROL VALVE

Wendell E. Miller, Warsaw, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 26, 1971, Ser. No. 166,155
Int. Cl. F15b *15/18*; F16d *31/06*; F04b *1/02*
U.S. Cl. 137—625.68 **11 Claims**



A control valve for use with a hydraulic system in which a variable displacement pump is controlled by the pressure drop from the inlet port to the work port of the control valve includes an improved logic system. This logic system provides flow reversible fluid communication between a control port and either of two work ports in the control valve when either work port is connected to the inlet port; and it provides an attenuation path from the control port to an exhaust port when neither work port is connected to the inlet port.

3,742,983

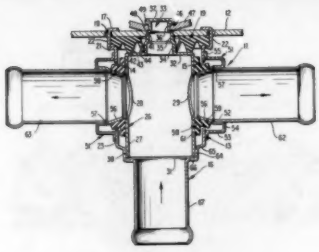
VALVE ASSEMBLY HAVING INTEGRAL BODY AND INLET

Robert M. Harter, Collins, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,618
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.47 **5 Claims**

A sheet metal plug valve assembly with a hollow tubular body having a lateral outlet opening and an axial inlet. The valve plug is a hollow member coaxially rotatable within the body between positions where it will block or permit flow through the body. The plug member has side and bottom openings which are aligned with the respective valve body openings in the valve open position. An outlet tube is secured

to the body in alignment with the lateral body opening, and there is a seal between the inner end of the outlet tube and the periphery of the plug member. An inlet tube, coaxial with the



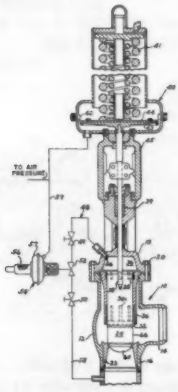
body is an integral axial extension of the body below the bottom of said plug member. The valve assembly can be made with more than one outlet or more than one inlet.

3,742,984

GLOBE VALVE HAVING HYDRAULIC BALANCING

Ronald D. Wilkins, and Morris B. May, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,562
Int. Cl. F16k *31/143*
U.S. Cl. 137—629 **8 Claims**



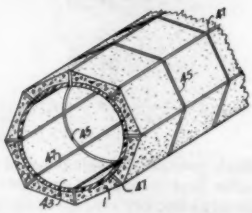
A globe valve, particularly for high pressure, high temperature steam, is equipped with an exterior bypass line for hydraulic balancing. The valve has a pneumatic operator and biases a valve plug closed by a spring. A guide for the valve plug is fitted at its lower end with a ring so that only a small amount of steam flows between the ring and the plug when the valve is closed or nearly closed; but, when the valve is open, steam flows between the plug and the ring faster than it can be evacuated by the bypass line. The steam flowing past the ring pressurizes a chamber at the top of the plug. The bypass line includes a pneumatically operated valve. When the main valve is to be opened, the bypass valve is opened, and remains open, to evacuate the chamber and begin balancing the hydraulic forces on the valve plug. The lower end of the plug is undercut, so that after partial opening of the valve, enough steam flows into the chamber to pressurize it again for assisting the next reclosing. During closing, the bypass valve remains open until the closing cycle is completed. Thus, when the plug approaches closed position, the supply of steam to the chambeis reduced and the pressure therein drops to cause hydraulic balancing again and thereby prevent the plug from slamming closed. Thereafter, the bypass valve closes and the chamber pressure increases to hold the plug tightly closed.

3,742,985

REINFORCED PIPE

David Rubenstein, San Diego, Calif., assignor to Chemstress Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 871,213, Sept. 4, 1969, which is a division of Ser. No. 613,398, Jan. 31, 1967, Pat. No. 3,489,626, which is a continuation-in-part of Ser. No. 427,861,. This application Oct. 29, 1970, Ser. No. 85,280
Int. Cl. F16l *9/22*
U.S. Cl. 138—141 **2 Claims**



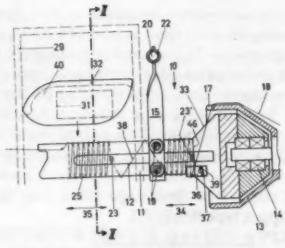
This patent application provides reinforced, composite concrete pipe having polymeric resin composition, filler and fiber reinforcement providing high strengths and resistant features to corrosion and environmental conditions. Joinery means for making pipelines of the individual pipe elements is provided and includes methods of making resilient resistant joinery and shock absorbinb joinery and pipe features of construction. The pipe has interior and exterior laminated constructions on porous structural material bodies, and includes also polymeric resin composition, filler and fiber reinforcements within the body of the porous structural material as a unitary structured material. Force systems derived from ehcmical means of stressing as well as thermal and mechanical means of prestressing preloads into the structure of the made pipe and pipelines comprise components of structure of the said reinforced, composite concrete pipe and pipelines.

3,742,986

DEVICE FOR FORMING COILS OF THREAD

Edgar Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd. (formerly Casper Honegger), Ruti, Zurich, Switzerland

Filed July 13, 1971, Ser. No. 162,188
Claims priority, application Switzerland, July 14, 1970, 10641/70
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **9 Claims**



A device useful on a loom to form coils of thread, e.g., for weft thread insertions, utilizing a rotating element positioned at one end of a thread coiling member and rotatable with respect thereto so as to wind turns of thread about the coiling member, the coils being formed by periodic displacement of a given number of the thread turns from a coiling zone of the coiling member to a delivery zone thereof, and one or more pieces of material are provided at the coiling zone as means to augment the peripheral extent of the device in the area of the

coiling zone so as to provide a greater cross-sectional periphery in the device at the rotating element end of the coiling zone than at the delivery zone end thereof.

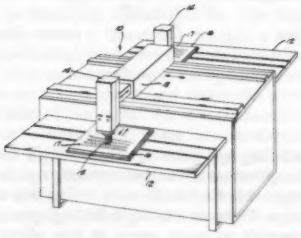
ERRATUM

For Class 139—127 see:
Patent No. 3,742,973

3,742,987
PIN ALIGNMENT APPARATUS

John W. Tarbox, Malibu, and Wilfried Zimmermann, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 28, 1970, Ser. No. 41,438
Int. Cl. B21f *7/00*
U.S. Cl. 140—147 **20 Claims**

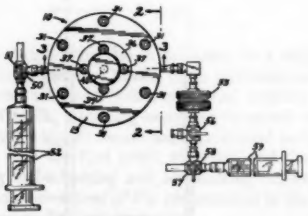


Pin alignment heads are sequentially positioned over groups of terminal pins disposed in arrays on panel boards to produce a uniform alignment of the pins by axial twisting thereof. At each of the positions, a group of pin sockets, individual to each head, are coaxially disposed over corresponding terminal pins of the selected group and seated on the pin ends. Upon seating, the pin sockets are rotated to twist the terminal pins beyond their elastic limit whereby the terminal pins retain a desired alignment induced by the pin sockets.

3,742,988
APPARATUS AND METHOD FOR DISSOLVING SOLUBLE GAS IN A LIQUID

George S. Kush, Burnsville, Minn., assignor to Nuclear Medical Computer Corp., Minneapolis, Minn.

Filed Nov. 3, 1969, Ser. No. 873,201
Int. Cl. B01l *5/00*
U.S. Cl. 141—2 **6 Claims**

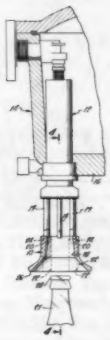


A container having a sealable access opening, an inlet conduit and an outlet conduit with a valve therein and a plunger threadedly engaged through the housing for breaking a glass ampule containing a soluble gas within the housing from the exterior thereof. The housing is flushed and filled with a desired fluid, the ampule is broken and the solution of fluid and soluble gas is drawn from the housing as desired.

3,742,989
BOTTLE ALIGNMENT DEVICE FOR BOTTLE FILLING MACHINES

Robert L. Campbell, 15805 Hickory Hill Drive, and Daniel A. Roatcap, 13007 Sunnybrook Lane, both of La Mirada, Calif.

Filed June 14, 1971, Ser. No. 152,629
Int. Cl. B65b *3/04;* **B67c** *3/26*
U.S. Cl. 141—371 **10 Claims**

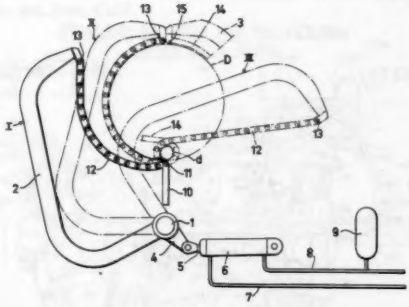


A bottle alignment device for bottling machines which reciprocates along vertical guides which are mounted on the filling valve head so that no contact is made between the device and the filling tube, thereby allowing the filling or vent tube to be small in diameter to increase clearance with the bottle opening, and allowing the bottle to be sealed using a single stationary sealing gasket.

3,742,990
DELIMBING ARRANGEMENT

Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Oct. 4, 1971, Ser. No. 186,259
Claims priority, application Sweden, Oct. 6, 1970, 13511/70
Int. Cl. A01g *23/00*
U.S. Cl. 144—2 Z **3 Claims**



Two opposed concave arms mounted at one end about a fixed point are pivotal by a drive means between an open position and an overlapping position. At the free end of each arm a shearing chain for delimbing is mounted, the other end being secured in a fixed point located substantially above said first point. Hereby it is possible to delimb tree stems of arbitrary small thickness.

3,742,991

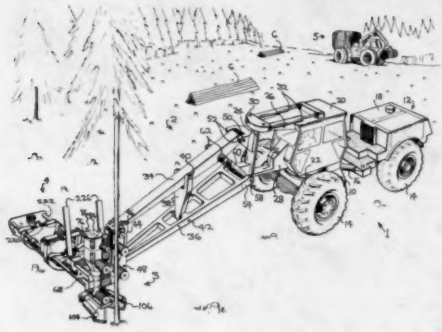
ROUNDWOOD STUMP PROCESSOR

Bruce J. McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois Inc., Toledo, Ohio

Division of Ser. No. 10,976, Feb. 12, 1970, Pat. No. 3,643,709. This application Oct. 7, 1971, Ser. No. 187,403

Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **6 Claims**



Apparatus for severing and processing trees into sectioned pulpwood bolts includes an extendable head-reach mechanism pivotally supported on a mobile vehicle for arcuate horizontal movement and vertical elevational movement about and with respect to the machine. The head-reach mechanism supports at its outer end, a) a processing unit including tree grasping shearing debranching means and feed mechanism and, b) a storage magazine for pulpwood and unloading means.

3,742,992

FEED ROLL SENSOR FOR EDGER SAW

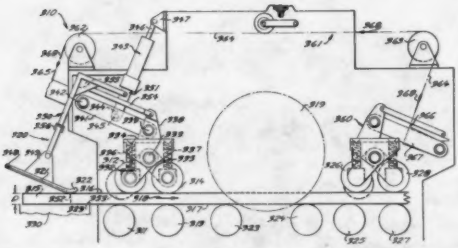
James R. McMillan, Box 17, Lone Butte, British Columbia, Canada

Filed May 5, 1971, Ser. No. 140,550

Claims priority, application Great Britain, May 6, 1970, 21,703/70

Int. Cl. B27b *25/02*

U.S. Cl. 144—246 R **6 Claims**



A sensing means for setting spacing between edger feed rolls in accordance with depth of cant passing through edger. Hinged shoe before infeed roll is rotated by cant leading edge, shoe actuating hydraulic servo device coupled to spaced infeed roll pair. Servo device adjusts pressure and spacing between infeed roll pairs, as determined by shoe movement. Outfeed roll pairs are coupled to infeed roll pairs for adjustment to similar spacing and pressure.

3,742,993

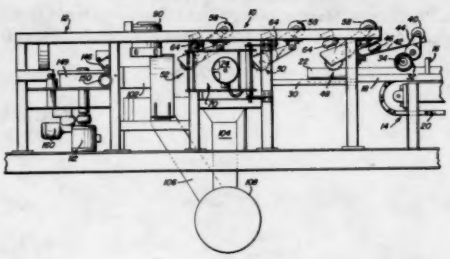
MACHINE FOR CUTTING PEELER CORES ON LOGS INTO STUDS AND CHIPS

David L. Morton, 4503 Federal Way, Boise, Idaho, and Adrian L. Landers, 570 Courthouse St., Many, La.

Division of Ser. No. 816,355, April 15, 1969, Pat. No. 3,627,005. This application Mar. 30, 1971, Ser. No. 129,338

Int. Cl. B27c *9/04*; B27l *11/02*

U.S. Cl. 144—248 **6 Claims**



A core handling apparatus for supporting a core or log for horizontal longitudinal advancement along a path past various tool heads operable to cut the core or log into a plurality of studs and chips. The core and log handling apparatus includes structure operable to move cores or logs along a predetermined path, independent of any displacement of the core or log other than longitudinally of the path, and the tool heads are disposed along the intended path of movement of the associated cores and logs and operable to sequentially chip material from the opposite sides of the cores or logs to form parallel opposite side planar faces on the cores or logs, chip material from the upper and lower portions of the cores or logs to form planar parallel upper and lower surfaces on the cores or logs, and form at least one horizontal kerf through the cores or logs after the latter have been shaped.

3,742,994

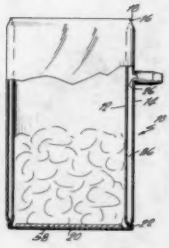
INFLATABLE CONTAINER

Philip Pensak, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,213

Int. Cl. B65d *31/04*

U.S. Cl. 150—1 **7 Claims**



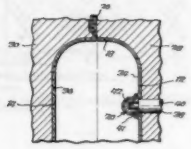
An inflatable double walled container having inner and outer walls of plastic film and provided with an imperforate bottom wall. The container may be inflated to form a rigid self-supporting waste basket or garbage can and when filled may be deflated and have the open end sealed and thereafter disposed of in any convenient manner.

3,742,995

BLOW MOLDED ARTICLE OF THERMOPLASTIC MATERIAL HAVING A THREADED INSERT THEREIN

Raymond C. Confer, Gasport, N.Y., and Floyd H. Talmon, Fairview Park, Ohio, assignors to Air-Lock Plastics, Inc., Tonawanda, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,944
Int. Cl. B65d *1/00*
U.S. Cl. 150—.5 4 Claims



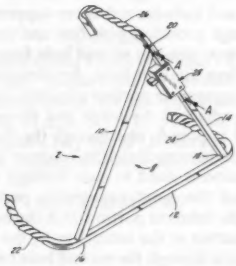
A method of and apparatus for blow molding an article having an insert permanently affixed thereto. The insert is placed on a removable member insertable through a wall of a mold section for positioning the insert in spaced relation to a mold cavity wall. An extruded parison is fed between complementary mold sections which are closed about the parison for enclosing a portion of the same. Air is introduced into the enclosed parison to expand the same into conformity with the cavity defined by the mold sections and the insert. Plastic material flows into the spacing between the insert and mold cavity wall to partially encapsulate the insert in sealed, interlocked relation to the wall of the plastic article.

3,742,996

ANTI-SKID DEVICE FOR AUTOMOBILES

Henry Pergament, Hawley Road, North Salem, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,817
Int. Cl. B60c *27/20*
U.S. Cl. 152—225 5 Claims



An anti-skid device for use in mounting on a vehicle wheel comprises a body member having three stationary arms, a first arm containing a slidably telescoping rod member having a first series of teeth; a locking assembly mounted on the first arm comprising a trigger means having a second series of teeth for meshing into the first series of teeth; and the anti-skid device being self-adjusting and self-locking unidirectionally for telescoping movement of the rod member in the direction of securely gripping the wheel.

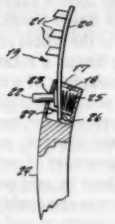
3,742,997

SNO-GO

Frank A. Summa, 22 Starbuck St., Staten Island, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,299
Int. Cl. B60c *27/02*
U.S. Cl. 152—233 1 Claim

A device for providing excellent traction for an automotive vehicle upon ice or snow, the device consisting of a locking latch with pins for detatchably attaching together a pair of tire grips which at their opposite ends are attached together by



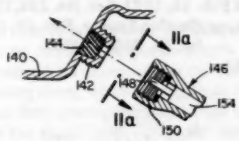
means of chains, thereby permitting quick and easy installation of the device around the automobile tires.

3,742,998

PROCESS FOR PREPARING TUBELESS PNEUMATIC TIRES FOR USE STRUCTURE BY WHICH THE PROCESS MAY BE UTILIZED

Louis Edward Kilmarx, Dirkson, Tenn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Division of Ser. No. 886,592, Dec. 10, 1969, Pat. No. 3,610,312, which is a division of Ser. No. 669,225, Sept. 20, 1967. This application May 20, 1971, Ser. No. 145,519
Int. Cl. B60c *29/00*
U.S. Cl. 152—427 2 Claims



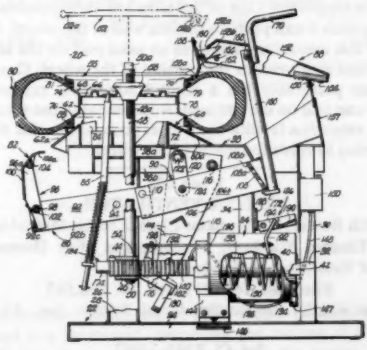
The tubeless tire is mounted on a rim in which the valve-stem opening is blocked by obstruction means having any of various structures. The tire is filled "under the bead." Subsequently a selected valve stem is used to force the obstruction means to unblock the opening and is mounted in the opening in communication with the tire.

3,742,999

TIRE MOUNTING AND DEMOUNTING MACHINE

Hugh I. Myers, Jr., St. Joseph, Mo., assignor to FMC Corporation, San Jose, Calif.

Filed July 14, 1971, Ser. No. 162,386
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.28 47 Claims



A power operated tire mounting and demounting machine provided with a wheel supporting frame unit; a pair of bead

breaking shoes; means mounting the shoes on the frame unit for movement into engagement with diametrically opposed beads along paths where the shoes initially move primarily radially of the wheel and thence axially thereof to assure positive displacement of the beads toward the central area of the wheel without damage to the wheel regardless of the diameter thereof within working limits; a rotatable element extending through the wheel for coupling of a tire mount-demount tool thereto; a single power source operably joined to the element and the bead breaking means for moving the shoes through the bead breaking paths thereof; and selectively operable means for permitting movement of only the tool operating element, or the bead breakers by said power source as selected. One of the bead breakers is removably mounted on the frame unit for facilitating placement on and removal of the wheel or mounted tire and wheel from the frame unit. The shoe of the other bead breaker is pivotally carried by the support therefor so it can be swung away from a tire on the frame unit to an ineffective position clearing the tire. Both bead breakers are provided with guide means and mounting structure which operate to limit radial movement of the shoe toward the bead seats of the wheel to an extent to prevent engagement of the shoes with corresponding tire bead seats.

3,743,000

DEVICE FOR MOUNTING AND UNMOUNTING GIANT TIRES

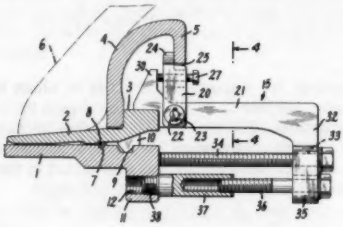
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale des Etablissments Michelin, raison sociale Michelin & Cie, (Pay-de-Dome), France

Filed Feb. 16, 1972, Ser. No. 226,730

Claims priority, application France, Feb. 19, 1971, 7105876

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.33 **4 Claims**



A device facilitating the mounting and unmounting of a giant pneumatic tire on a wheel comprises a pair of arms pivoted about a pin and a screw by which the distance between the arms can be adjusted. One of the arms rests against the inner side of a flange of a side ring and the other arm rests against an associated conical ring by which a bead of the tire is supported. One of the arms has an adjustable extension by which it can push on the rim well of the wheel. Adjustment of this extension facilitates an axial pull on the side ring and conical ring towards the outside of the wheel. One of the arms also preferably has a second adjustable extension by which it can pull on the rim well. Adjustment of the second adjustable extension facilitates an axial push on the side ring and conical ring towards the inside of the wheel.

3,743,001

VEHICLE VENTILATOR

John Keith Baxter, 20 Hannams Close, Lychelt Matravers, and Paul Thomas Stiddard, 17 Ingleshan Way Hamworthy, both of Poole, Dorset, England

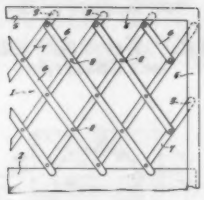
Filed Jan. 14, 1971, Ser. No. 106,567

Claims priority, application Great Britain, Jan. 14, 1970, 1,725/70

Int. Cl. E06b *7/082*

U.S. Cl. 160—105 **1 Claim**

A ventilator grille, to be fitted into the aperture of a partly open window of a vehicle, comprises a lattice of pivotally intersecting strips. At one edge of the lattice the strips are grooved to seat on the exposed edge of the window, and at the



opposite edge the strips project for seating in the glass-receiving channel of the window frame.

3,743,002

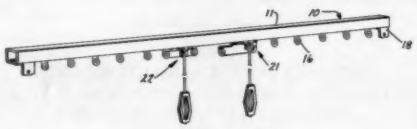
PLASTIC MASTER WITH DETACHABLE BATON

James A. Ford, Sturgis, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed Sept. 22, 1971, Ser. No. 182,788

Int. Cl. A47h *1/00, 5/02*

U.S. Cl. 160—126 **15 Claims**



A master carrier is configured for slidable securement to a transverse rod and includes a drapery supporting portion and an exposed flange provided with first and second holes connected by a narrow slot, the second hole facing forwardly and being smaller than the first hole. An elongate flexible baton carries a hand engageable portion adjacent one end and an enlarged retainer adjacent the other end thereof. The retainer portion is sized to pass freely through the first hole, the portion of the baton intermediate the retainer portion and hand engageable portion is sized to pass through the slot into the second hole and the hand engageable portion is manually pulled to abut the retainer portion with the back of the flange of the master carrier at the second hole, the retainer portion being sized to pass through the second hole only in response to a substantial pull axially of the second hole. Thus, the master carrier and a drapery panel supported thereby are movable along the traverse rod by manual pulling of the hand engageable portion of the baton generally in a direction parallel to the traverse rod, while a substantial pull on the baton away from the traverse rod removes the baton from the master carrier to avoid damage thereto. The baton is preferably formed by placing an elongated flexible element so that it extends through, between and beyond first and second spaced mold cavities, the first cavity being arranged for molding the retainer portion on the baton element and the second cavity being arranged for molding the hand engageable portion on the baton element. The mold cavities are closed and filled with a hardenable plastic material. Upon hardening of such material the mold cavities are opened. The baton element is then severed between the close spaced resulting molded retainer portion and hand engageable portion and the process is repeated either in time or through the use of multiple mold cavities to form a series of batons each having a hand engageable portion adjacent one end and a retainer portion adjacent the other end.

3,743,003
MAKING INVESTMENT SHELL MOLDS INHIBITED AGAINST REACTION WITH MOLTEN REACTIVE AND REFRACTORY CASTING METALS

Robert A. Brown, Albany, Oreg., assignor to Rem Metals Corporation, Albany, Oreg.

Filed June 3, 1971, Ser. No. 149,485
Int. Cl. B22c 9/12
U.S. Cl. 164—16 **25 Claims**

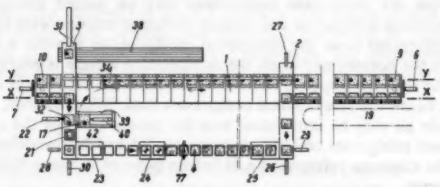
DISPOSABLE PATTERN
DIP COAT WITH A SLURRY COMPRISING:
1. LIQUID VEHICLE
2. FINELY DIVIDED MOLD MATERIAL
3. BINDER
4. AN INHIBITOR-FORMER, A TUNGSTEN OR MOLYBDENUM COMPOUND REDUCIBLE BY HYDROGEN TO TUNGSTEN OR MOLYBDENUM
DRAIN
STUCCO
DRY
SUPERIMPOSE ALTERNATING DIP COATS AND STUCCO COATS OF PREDETERMINED COMPOSITION AND NUMBER
REMOVE PATTERN
DRY AND PYROLYZE IN ATMOSPHERE OF HYDROGEN TO REDUCE THE COMPOUND OF TUNGSTEN OR MOLYBDENUM TO THE CORRESPONDING METAL WHICH THEREUPON FORMS A PROTECTIVE COATING ON THE SIIC ED AND MOLD MATERIAL AT THE MOLD INTERFACE, INHIBITING THEIR REACTION WITH MOLTEN METAL SUBSEQUENTLY CAST IN THE MOLD
FINISHED MOLD

An investment shell mold inhibited against reaction with molten titanium, zirconium and other reactive and refractory metals cast therein is made by investing a pattern with successive dip coats and stucco coats. The first dip coat includes a tungsten and/or molybdenum compound inhibitor-former which is reducible by hydrogen to metallic tungsten or molybdenum. After removal of the pattern, the green mold is dried and then pyrolyzed in an atmosphere of hydrogen under conditions predetermined to convert the inhibitor-former to metallic condition. This creates on the mold interface a coating of metallic molybdenum or tunsten which serves as a physical barrier, inhibiting reaction of a molten reactive or refractory metal subsequently cast in the mold, with the mold material and binder particles of the latter.

3,743,004
AUTOMATIC MOLDING PLANT OPERATION METHOD

Friedrich B. Becke, Wolfartsweier, Germany, assignor to Badische Maschinenfabrik, Karlsruhe, Germany

Division of Ser. No. 97,123, Dec. 11, 1970, Pat. No. 3,682,236.
This application July 18, 1972, Ser. No. 272,750
Claims priority, application Germany, Dec. 11, 1969, P 19 62 131.9
Int. Cl. B22d 33/00
U.S. Cl. 164—18 **2 Claims**

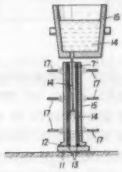


An automatic molding plant and operational method having a plurality of traverse carts or bogies to convey box molds. The molds are transferred from a sidetrack at a loading station and are ready for casting, then to a casting station or train and from there to an unloading station by way of a cooling track comprising at least two conveying paths positioned in different horizontal planes. Liftable and/or lowerable end sections are provided at the ends of the conveying paths, and the sidetrack is connected with one conveying path through the loading and unloading stations. Transferable weighing members are placed in the box molds in front of the casting station and are conveyed from the unloading station to the loading station on the traverse carts. After part of the cooling track has been traversed, the mold packs are separated from the box molds, and the box molds are returned to the molding machine while the mold pack traverses the remaining of the cooling track in an undamaged manner.

3,743,005
PROCESS FOR PRODUCING HOT ROLLED THREE LAYER STEEL PRODUCTS FROM CONTINUOUSLY CAST HOLLOW TUBES

Giswalt Veitl, and Ernst Bachner, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Sept. 17, 1971, Ser. No. 181,627
Claims priority, application Austria, Sept. 22, 1970, 8546/70
Int. Cl. B22d 11/12
U.S. Cl. 164—76 **5 Claims**

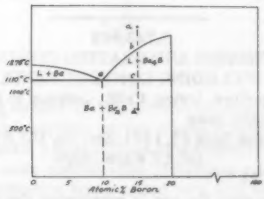


The invention relates to a process for producing three-layer rolled products by rolling composite ingots. The ingots are produced by casting bars according to the continuous casting process and guiding them, when issuing from the mould, along a curved path at first downwardly and then upwardly until a height at which the liquid core of the bar cannot ascend any further so that when casting and transportation is continued a hollow bar is obtained; said hollow bar then is cut into pieces which are permitted to solidify and then are poured full with a metal of a composition different from the composition of the bar. This process permits a simple and low-cost production of sheets clad with layers which, compared to the overall thickness of the sheets, are very thin.

3,743,006
PREPARATION OF BERYLLIUM BORIDE ARMOR BY DIRECT CASTING

Carl F. Cline, Walnut Creek, and Mark L. Wilkins, Pleasanton, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 7, 1972, Ser. No. 223,840
Int. Cl. B22d 27/04
U.S. Cl. 164—128 **4 Claims**



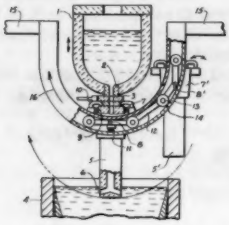
A method of casting lightweight armor material of Be_4B dispersed in a Be matrix comprising the melting of a mixture of Be_4B and Be powder containing 10–20 atomic percent boron, cooling to induce a temperature gradient in the molten material, and recovering the solidified cerment.

3,743,007

CONTINUOUS CASTING APPARATUS WITH INTERCHANGEABLE POURING TUBES

Willi Simons, Duesseldorf; Horst Grothe, Kaarst; Rolf Haselhuhn, Duesseldorf, all of Germany; Peter Koenig, Zumikon, Switzerland, and Klaus Brock, Duesseldorf, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany and Concast AB, Zurich, Switzerland

Filed Oct. 21, 1970, Ser. No. 82,750
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 **12 Claims**



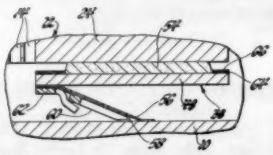
The outlet of a tundish communicates with the inlet of a continuous-casting mold. Two or more immersible pouring tubes are mounted for movement in a path in such a manner that one pouring tube communicates with the inlet and the outlet, while at least one other pouring tube is in standby position. The last mentioned pouring tube may be moved to operating position and simultaneously the pouring tube previously in operating position is displaced therefrom.

3,743,008

REGENERATOR SEAL

Richard M. Zeek, Farmington, and Adolf Hetke, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 4, 1971, Ser. No. 103,599
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 **4 Claims**



A regenerator seal structure for a rotary regenerator in which the wear seal element of graphite or other suitable material is plasma spray bonded to a support structure such as a seal support platform or the matrix of the generator.

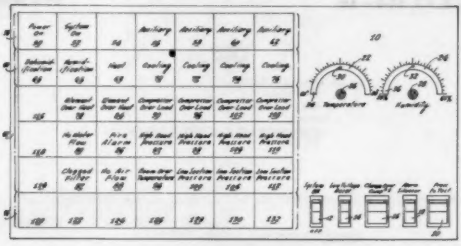
3,743,009

AIR CONDITIONING AND HEATING CONTROL SYSTEM INCLUDING CONTROL PANEL

Ernest C. Dagerford, Irvine, Calif., assignor to BEC Products, Inc., Davenport, Iowa

Filed June 23, 1971, Ser. No. 155,826
Int. Cl. F25b *29/00*
U.S. Cl. 165—11 **22 Claims**

A control system for use in monitoring the operation of a plurality of pieces of equipment such as equipment used in an air conditioning and heating system and including a control panel having a plurality of output indicators arranged in rows and columns and with first ones of the indicators providing indication that individual ones of the pieces of equipment are in an operative state and with others of the indicators providing an indication of a malfunction in the operation of individual ones of the pieces of equipment and with means coupled to the equipment and to the indicators for providing for the first ones of the indicators to be in an operative state when individual ones of the equipment are in an operative state and for the others of the indicators to be in an operative state when malfunctions exist in the operation of the individual pieces of



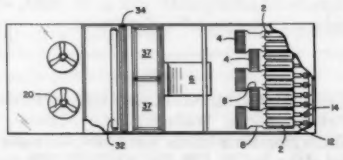
equipment and wherein the indicators are formed in a matrix having the first ones of the indicators along a first line and the others of the indicators arranged along parallel lines perpendicular to the first line and with the indicators along the parallel lines relating to malfunctions in the equipment indicated to be in an operative state by the indicators located at the interceptions of the first line and the parallel lines perpendicular to the first line.

3,743,010

AIR CONDITIONING APPARATUS

Samuel D. Farney, and Russell E. Wood, both of Syracuse, N.Y., assignors to Carver Corporation, Syracuse, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,718
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **9 Claims**



An air conditioning apparatus including refrigeration means and heating means for selectively heating and cooling a plurality of zones, the apparatus being provided with separate heating means and separate refrigerant evaporator coils for each zone served thereby. High pressure, hot refrigerant vapor from the refrigerant compressor may be passed through a common refrigerant coil in heat exchange relation with liquid refrigerant from the refrigerant condenser to provide a load on the compressor when the refrigeration system is energized and the load imposed thereon by the separate evaporator coils is below the safe minimal compressor load. When desired, outside air may be introduced into the system through the common refrigerant coil, the air being cooled and dehumidified by the common refrigerant coil before passage to the individual zones.

3,743,011

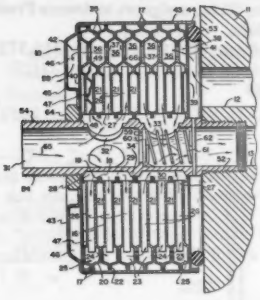
HEAT EXCHANGER

Donald J. Frost, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Continuation-in-part of Ser. No. 23,191, March 27, 1970, abandoned. This application Nov. 4, 1971, Ser. No. 195,680
Int. Cl. F28f *3/00*
U.S. Cl. 165—38 **19 Claims**

A heat exchanger apparatus for exchange of heat between two fluids which is especially adaptable for use as an oil cooler

in an internal combustion engine with the apparatus comprising a stack of successive pairs of metal plates shaped and bonded together and enclosed in a casing, the stack of plates being shaped to prvide interconnected passages for a first fluid



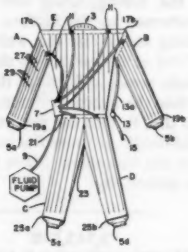
such as the oil to be cooled, surrounding passages for a second fluid such as the liquid coolant from an internal combustion engine, and means for flowing the oil and the coolant through their respective passages to and from the engine.

3,743,012

CONTROLLED TEMPERATURE GARMENT

Darryl E. Laxo, Novato, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1971, Ser. No. 166,918
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 **10 Claims**



A controlled temperature garment using the counter flow heat exchanger principle to maintain an equal temperature distribution along the inner surface of the garment. Three layers of material are bonded together in such a manner as to provide flow channels along the garment. The garment comprises distribution, turning and collection chambers at each end of the channels; and a fluid discharge and collecting manifold to control the flow of the temperature controlling fluid.

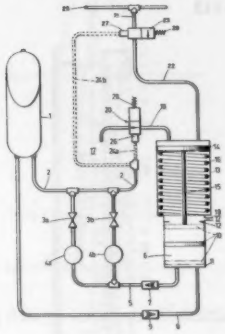
3,743,013

NEW DEVICE FOR THE STORAGE AND USE OF HYDRAULIC AND/OR PNEUMATIC POWER, PARTICULARLY FOR OPERATION OF SUBMERGED WELL HEADS

Jacques Harbonn, Jouars Ponchartrain, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, France

Filed Feb. 17, 1971, Ser. No. 116,134
Claims priority, application France, Feb. 25, 1970, 7006859
Int. Cl. E21b *7/12*
U.S. Cl. 166—.5 **7 Claims**

Device for energizing operating members of a submerged installation such as a well head, comprising storage means for a pressurized working fluid, circuit means in communication with said storage means for actuating said operating members by action of the working fluid passing therethrough, and



means for pressurizing the working fluid in said storage means, actuated by a pressurized auxiliary fluid such as the drilling fluid.

3,743,014

APPARATUS FOR CONDUCTING CONTROLLED WELL TESTING OPERATIONS

Robert L. Jessup, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 181,984, Sept. 20, 1971. This application Aug. 15, 1972, Ser. No. 280,751
Int. Cl. E21b *33/03, 30/00*
U.S. Cl. 166—69 **4 Claims**

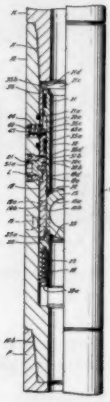
A well testing apparatus, and method for effecting well testing, wherein a translatable barrier means is operable to both permit and indicate a flow of formation fluid through a testing string portion while continuously preventing a transmittal of fluid from a formation being tested to a well head and/or a flow of such fluid past the barrier means.

In practicing this method and utilizing this apparatus, an abruptly operable indicating means is operable in response to a generation of pressure within a testing string to provide a well head indication that such a pressure generation has been achieved.

3,743,015
MUD SAVER VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed Sept. 7, 1971, Ser. No. 178,120
Int. Cl. E21b *43/00, 33/00*
U.S. Cl. 166—113 8 Claims

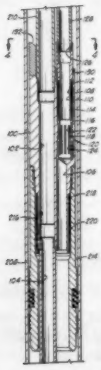


A mud saver valve adapted to be disposed below a kelly for controlling the discharge of mud through the kelly into the drill string and for preventing loss of mud at the derrick floor from the kelly when it is disconnected with the mud saver valve from the drill string, wherein means are provided for preventing a closure of the mud saver valve, even though the mud supply pressure to the kelly is cut off, if there is well pressure in the drill string which might blow out upon a disconnection of the kelly, whereby the danger of having a well blowout upon a disconnection of the kelly may be avoided.

3,743,016
HYDRAULIC ANCHOR WELL TOOL

Morgan LeVon Crow, Dallas, Tex., assignor to Dresser Industries Inc., Dallas, Tex.

Filed Oct. 13, 1971, Ser. No. 188,925
Int. Cl. E21b *33/122, 33/129*
U.S. Cl. 166—120 9 Claims

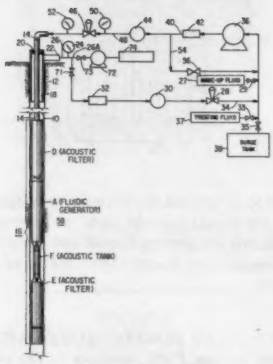


A single or multiple bore completion tool for permanent packers set in a well bore, the tool having a hydraulic hold-down anchor actuated by zone pressure from below the packer. In the multiple completion version, the hydraulic anchor is automatically released when a tubing string is removed from the well tool.

3,743,017
USE OF FLUIDIC PRESSURE FLUCTUATION GENERATOR TO STIMULATE UNDERGROUND FORMATIONS

Clarence R. Fast; Lawrence B. Wilder, and Ralph W. Veatch, Jr., all of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Apr. 21, 1972, Ser. No. 246,373
Int. Cl. E21b *43/25, 43/26, 43/27*
U.S. Cl. 166—249 12 Claims

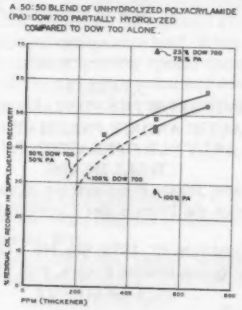


This invention concerns the use of a fluidic pressure fluctuation generator in a well bore to stimulate a subsurface formation. The generator is connected to the lower end of a string of tubing or drill pipe and is suspended in a well bore adjacent the formation interval to be stimulated or fractured. A fluid is pumped down the tubing string and through the fluidic generator and returned to the surface through the annulus between the tubing string and the wall of the well bore. A backpressure is held at the surface on the returning fluid such that the hydrostatic pressure P_h of the fluid in the well bore at any level is less than the hydraulic fracturing pressure but sufficiently great so that P_h plus the maximum pressure increase P_m caused by said fluidic pressure fluctuation generator is sufficient to fracture the formation. Other formation stimulation methods are also described.

3,743,018
OIL RECOVERY PROCESS USING AN UNHYDROLYZED POLYACRYLAMIDE AND PARTIALLY HYDROLYZED POLYACRYLAMIDE MOBILITY CONTROL AGENT

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed July 19, 1971, Ser. No. 163,642
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 6 Claims


A 50:50 BLEND OF UNHYDROLYZED POLYACRYLAMIDE (PA) - DOW 700 PARTIALLY HYDROLYZED COMPARED TO DOW 700 ALONE.
75% DOW 700 25% PA
50% DOW 700 50% PA
100% DOW 700
100% PA
% RESIDUAL OIL RECOVERY IN SUPPLEMENTED RECOVERY
PPM (THICKENER)

A mixture of unhydrolyzed polyacrylamide together with partially hydrolyzed polyacrylamide is used for recovery of

petroleum. The partially hydrolyzed material reduces permeability and the unhydrolyzed material maintains viscosity.

3,743,019

SAND CONTROL METHOD

Kenneth D. Totty, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 10, 1972, Ser. No. 242,837
Int. Cl. E21b *33/138, 43/02*
U.S. Cl. 166—276 26 Claims

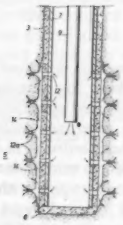
The present invention relates to a method of controlling loose sands and the like in a subterranean earth formation wherein an acid curable resin composition is cured within the formation by contact with an acyl halide hardening agent thereby consolidating the loose sands into a hard permeable mass.

3,743,020

CONSOLIDATING PERFORATION CHANNEL WALLS

George O. Suman, Jr., Carey E. Murphey, Jr., Edwin A. Richardson, and Robert S. Torrest, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 20, 1971, Ser. No. 135,683
Int. Cl. E21b *33/13*
U.S. Cl. 166—292 6 Claims



In a well that opens into an unconsolidated reservoir formation through a perforated portion of grouted casing, the effective permeability is increased by flowing acid through the perforation tunnels to form channels between the grouting material and the reservoir formation and, while maintaining a fluid flow rate that keeps the channels free of solid particles inflowing a sand consolidating fluid that converts the walls of the channels to structures that are integral and permeable.

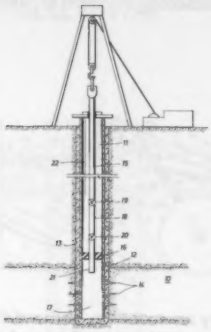
3,743,021

METHOD FOR CLEANING WELL PERFORATIONS

Thomas Vernon McCauley; Herbert W. Barnes, both of New Orleans, La., and George O. Suman, Jr., Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 19, 1971, Ser. No. 163,856
Int. Cl. E21b *21/00*
U.S. Cl. 166—311 13 Claims

Sand control operations in cased and perforated wells completed into unconsolidated formations are improved by first cleaning the perforations by packing off the perforated interval of the well, rapidly opening the packed-off interval of the well into fluid communication with a low-pressure chamber to surge fluid from surrounding earth formations through the perforations and into the well, allowing debris carried by the surging fluid to settle, and circulating debris from the well.

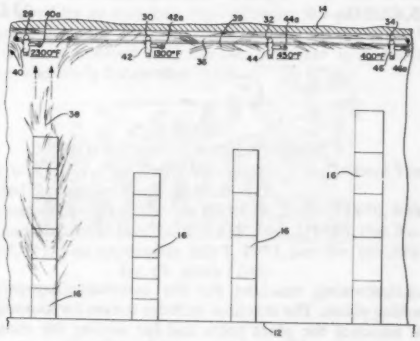


3,743,022

FIRE PROTECTION SYSTEM

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Apr. 26, 1971, Ser. No. 137,336
Int. Cl. A62c *32/12*
U.S. Cl. 169—16 1 Claim



A system for protecting a structure and its contents from fire wherein a plurality of extinguishant discharge heads are disposed in the space defined by the structure, with each head being responsible for a particular portion of said space. A fire responsive device is automatically responsive to a predetermined temperature existing in one or more portions of the space at a distance of less than six inches from the ceiling of the structure, for actuating the head responsible for the space and causing a resultant discharge of extinguishant from the head.

3,743,023

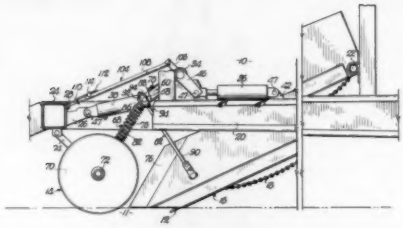
CONTROL FOR GROUND TOOLS OF FARM IMPLEMENTS

Thomas Albert Bedwell, Logan, Utah, assignor to Hesston Corporation, Hesston, Kans.

Filed Oct. 7, 1971, Ser. No. 187,322
Int. Cl. A01d *17/00*
U.S. Cl. 171—5 10 Claims

A control for farm implements which provides the alternative of raising and lowering a pair of the ground-engaging tools as a unit or individually and relative to each other. Each tool is

pivotally coupled with a corresponding shaft having a power means releasably connected thereto for the raising or lowering of the tool by rocking its shaft. A removable cross pin is provided for interconnecting the shafts to cause the latter to move



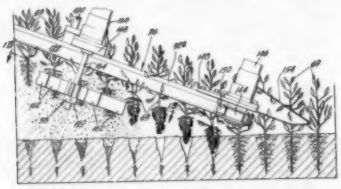
in unison as they are rocked by either of the power means. A graduated instrument is pivotally coupled with one of the shafts for indicating the extent of ground penetration of one or both of the tools.

3,743,024

PLANT HARVESTING MACHINE

William Harold Mayo, Cairo, Ga.; Arthur Burnett Winters, Narberth, Pa.; James Bradley Davis, Jr., Cairo, Ga.; Harrison Edenfield, Cairo, Ga., and Aubrey Cornelius Gainous, Cairo, Ga., assignors to Campbell Soup Company, Camden, N.J.

Filed Mar. 19, 1971, Ser. No. 125,945
Int. Cl. A01d *19/12*
U.S. Cl. 171—61 **23 Claims**



A harvesting machine for the automatic harvesting of seedling plants. The machine includes means for loosening the soil adjacent the plant roots and for cutting the roots at a predetermined depth. Conveyors aligned with each row of plants and driven at a speed commensurate with the forward speed of the machine lift the plants from the loosened soil. Rotary beaters having resilient vanes engage the roots of the plants as they pass along the conveyors to remove any soil clinging to the roots. The machine includes means for advancing the plants directly into shipping cartons from the conveyors.

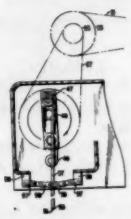
3,743,025

RECIPROCATING SOIL AERATOR WITH FLEXIBLE TOOL GUIDE ASSEMBLY

Richard E. Thatcher, 6832 Westcott Drive, Richmond, Va.

Filed July 1, 1970, Ser. No. 51,492
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 **15 Claims**

Soil aerator having flexible tines which pivot about a movable pivot means is disclosed. Driven ends of the tines are driven in substantially circular motions while the flexible tines are simultaneously guided and pivoted by links of chains. Penetrating ends of the tines "walk" over the surface of the soil under the guidance of the chains. In this manner, the tines are permitted to pierce the soil without kicking up debri and without undue stress on the tines so that the tines can be small and flexible. Because the aerator disclosed herein kicks up such little debri, it can be mounted on lawn mower frames and



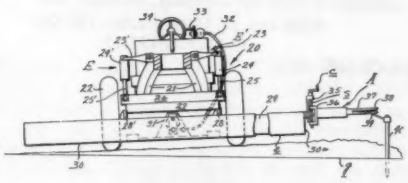
used simultaneously with both reel and rotary type lawn mowers. Two such combinations are disclosed herein.

3,743,026

POSITION SENSING APPARATUS

Raymond E. Gill, and Floyd J. McMahon, both of Peoria, Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed July 8, 1971, Ser. No. 160,741
Int. Cl. E02f *3/76*
U.S. Cl. 172—4.5 **8 Claims**



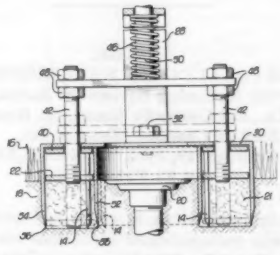
A position sensing apparatus mounted on the cutting tool of a surface finishing machine for automatically adjusting the height of said cutting tool; said apparatus having a feeler arm adapted to ride over a reference string being preset at a desired height, and a switch control arm disposed within a dust proof housing and coupled to said feeler arm for opening and closing a photoelectric cell switch within said housing. The cutting tool is raised and lowered by an elevator mechanism, such as a fluid responsive cylinder, of the double-acting type, or hydraulic motor arrangement, which is in communication with an electro-hydraulic valve and operates responsive to the movement of said switch control arm to maintain the height of the cutting tool at the desired level above the ground surface.

3,743,027

DEVICE FOR CULTIVATING AROUND A FIXED OBJECT

Cecil T. Hatfield, 1608 Micheltorena St., Los Angeles, Calif.

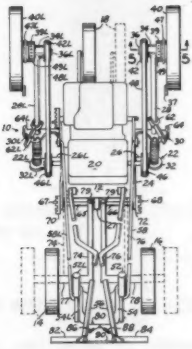
Filed Apr. 12, 1971, Ser. No. 133,285
Int. Cl. A01d *35/00*
U.S. Cl. 172—13 **3 Claims**



A device for cultivating around a fixed object including a plurality of vertical cutting blades attached on a handle

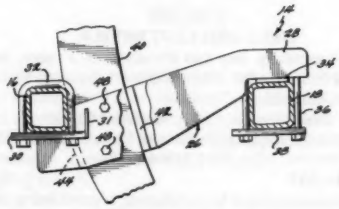
between outer and inner cylinders. The cutting blades are circumferentially spaced and obliquely positioned relative to the direction of rotation of the handle. Self-operating means surround each of the blades for expelling cultivated material downwardly away from the blades.

3,743,028
RIGHT AND LEFT HAND LAWN EDGER-TRIMMER
Chester V. McCloud, 2354 N. W. 18, Oklahoma City, Okla.
Filed Sept. 7, 1971, Ser. No. 178,135
Int. Cl. A01d *35/16, 53/14*
U.S. Cl. 172—15 **1 Claim**



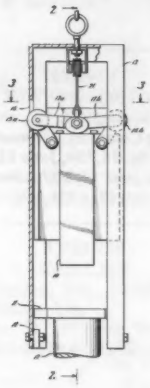
A wheel supported frame supports an engine having a V-belt pulley connected to the respective opposing ends of its crank shaft. A V-belt, pulley and guard shielded cutting blade are mounted on respective ends of an axle journaled by a housing attached to one end of a rod which is supported, at its other end, at the forward respective right and left sides of the frame, by a bracket moved vertically by control means. Rear wheel axle mounting means permits individual lateral and vertical movement of the two rear wheels for horizontally supporting the frame adjacent a curb, or the like.

3,743,029
ADJUSTABLE SHANK MOUNTING
Franky D. Mills, Plainview, Tex., assignor to The Hamby Company, Plainview, Tex.
Filed June 11, 1971, Ser. No. 152,356
Int. Cl. A01b *33/00*
U.S. Cl. 172—34 **6 Claims**



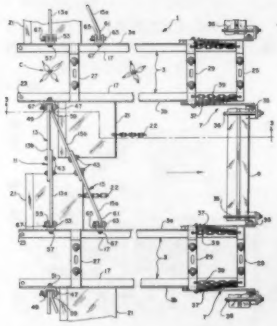
A plow frame or the like includes a pair of horizontal transverse beams along which a plurality of ground-working implements or shanks are mounted. Each shank is clamped to the beams by an assembly which includes a pair of vertical mounting plates extending between and releasably secured at their ends to the beams, the upper end portion of the respective shank being clamped between the two plates in any of a variety of vertical positions. The assemblies are constructed to be reversible end-to-end to permit staggering of the shanks in a row.

3,743,030
MECHANICAL PILE DRIVING HAMMER
Henry A. Gifford, 2105 13th St., Galena Park, Tex.
Filed Apr. 6, 1971, Ser. No. 131,731
Int. Cl. E02d *7/08*
U.S. Cl. 173—124 **4 Claims**



This all mechanical hammer is made of two parts: (1) the piston assembly which delivers the blow, (2) an outside frame to lift and guide the piston. There is a lock and trigger release mechanism which locks the piston in the upper part of the outer frame. The only lift line fastens to the outer frame lifts the complete assembly to a desired height. The lock is then hand tripped by an attached rope allowing the piston to fall and strike the pile. With the piston resting on the pile, the outer frame is lowered until the two parts are again locked together and ready for another cycle.

3,743,031
CULTIVATOR FENDER ASSEMBLY
Milton G. Dickey, Pine Bluff, Ark., assignor to Farmers Tractor and Equipment Co., Pine Bluff, Ark.
Continuation-in-part of Ser. No. 003,438, Jan. 16, 1970, which is a continuation of Ser. No. 511,118, Dec. 2, 1965, Pat. No. 3,595,321. This application July 7, 1971, Ser. No. 160,340
Int. Cl. A01b *17/00*
U.S. Cl. 172—513 **2 Claims**



A cultivator fender assembly for being dragged along the ground by a cultivator vehicle to shield rows of crops from having earth, cultivated alongside the rows by cultivators carried by the vehicle, thrown onto the rows. The fender assembly includes a plurality of elongate shields extending parallel to one another, the shields being arranged in pairs with the shields constituting each pair being spaced apart from each other on opposite sides of a row of crops and with the pairs of

shields being spaced apart from each other a distance generally corresponding to the spacing between the rows. The pairs of shields are connected to the vehicle in a manner which permits up and down movement of the shields in response to changing ground contours. Triangulated linkages are provided which extend between the rear portions of adjacent pairs of shields for substantially eliminating back and forth lateral swinging movement (i.e., fishtailing) of one pair of shields relative to the others.

3,743,032

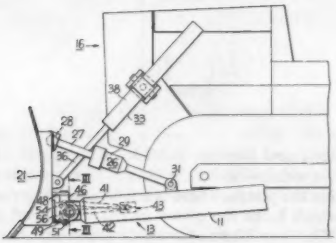
DOZER WITH NO BIND TILT LINKAGE

Frederick A. Schick, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Continuation of Ser. No. 45,730, June 12, 1970, abandoned. This application June 14, 1972, Ser. No. 266,510

Int. Cl. A02f *3/76*

U.S. Cl. 172—803 **3 Claims**



Compensating linkage for a tilt dozer including a transversely extending link pivotally connected at one end to the rear of the moldboard on a vertical axis and pivotally connected at its other end to diagonal braces from the two dozer push arms.

3,743,033

ROTARY DRIVEN ROCK CUTTING EQUIPMENT

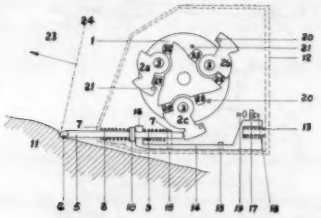
Richard Francis Taylor, Johannesburg, Republic of South Africa, assignor to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Republic of South Africa

Filed June 2, 1971, Ser. No. 149,154

Claims priority, application South Africa, June 4, 1970, 3787

Int. Cl. B25d *15/02*

U.S. Cl. 173—4 **7 Claims**



The invention relates to mobile rock cutting equipment which includes a rotor carrying a series of swing hammers which are adapted to strike cutting tools positioned against a rock face and mounted in the equipment for limited axial movement. The invention further uses this axial movement to determine pressure applied to the cutting tool tip and to use the pressure to operate control mechanisms acting on the rotor and motive power unit for the equipment.

3,743,034

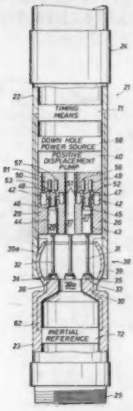
STEERABLE DRILL STRING

William B. Bradley, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,526

Int. Cl. E21b *7/08*

U.S. Cl. 175—61 **19 Claims**



Method and apparatus for maintaining the orientation of a laterally unsupported driven shaft constant with respect to a non-rotating coordinate system as the driven shaft is rotated by a non-coaxial rotating driving shaft. In a directional drilling method, the apparatus is disposed in a well drill string along with means for adjusting the orientation of the portion of the drill string below the apparatus to provide a steerable drill string. The apparatus for maintaining the orientation of the shafts comprises an axial-piston machine mounted on one of the shafts and operatively connected to a control flange affixed to the other of the shafts. A universal coupling connects the shaft in driving-driven relationship. The deflection of the shaft at the universal joint is maintained constant with respect to a non-rotating coordinate system by driving the pistons of the axial piston machine in timed relationship with the rotation of the shafts so that each piston completes one reciprocating cycle each time the shafts complete one rotation.

3,743,035

WELL DRILLING DEVICE

Wladimir Tiraspolsky, Issy Les Moulineaux, France, assignor to Institut Francais Du Petrole, Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Filed May 28, 1971, Ser. No. 148,066

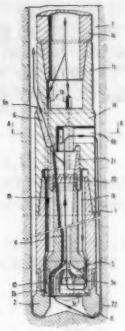
Claims priority, application France, Mar. 6, 1971, 7120472

Int. Cl. E21b *41/00*

U.S. Cl. 175—317 **7 Claims**

A drill bit comprising a body wherein is provided a chamber including a Venturi passage in communication with an ejector located below the Venturi passage, this assembly being located close to the working face of the bit which is in contact with the well bottom. The chamber is connected at its lower part to said working face through duct means and is connected at its upper part to the annular space between the wall of the well and the drill bit. The ejector is connected with a flushing fluid supply so as to produce an upwardly directed flow of fluid through the chamber and a negative pressure is thus created in said chamber with respect to the fluid pressure at the level of said working face. The cuttings are lifted through said duct means as a result of said negative pressure and flow

through the chamber in the same direction as the flushing fluid flowing from the ejector. Means may be provided for reversing

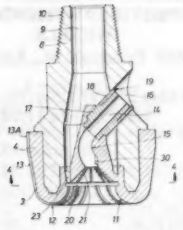


when desired the direction of flow of the flushing fluid on the working face of the bit.

3,743,036
DIAMOND BIT WITH ANNULAR MUD DISTRIBUTING GROOVE

Robijn Feenstra, and Julius O. Hinze, Rijswijk, Zurich, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed May 10, 1972, Ser. No. 252,064
Claims priority, application Great Britain, May 10, 1971, 13,928/71
Int. Cl. E21b 9/16; E21c 13/02
U.S. Cl. 175—330 **8 Claims**



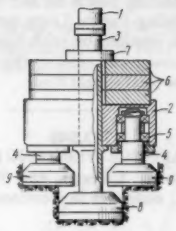
In a full hole diamond bit of the type provided with a core ejector an improved mud distribution system includes two sets of mud channels communicating with an annular groove concentric with the central bit axis. Mud is supplied to the groove via conduits communicating with the central mud flow passage of the bit.

3,743,037
RIG FOR ROTARY DRILLING OF HOLES AND SHAFTS

Georgy Ivanovich Bulakh, Oktyabrsky prospekt, 365, kv. 29, Ljubertsy Moskovskoi Oblasti, and Vladimir Alexandrovich Vysotsky, naberezhnaya Tarasa Shevchenko, 1/2, kv. 270, Moscow, both of U.S.S.R.

Filed Apr. 22, 1971, Ser. No. 136,520
Int. Cl. E21b 9/24
U.S. Cl. 175—334 **2 Claims**

A rig for rotary drilling, in which a pilot drilling tool is disposed coaxially relative to the drilling string and side drilling tools are radially displaced with respect to the pilot drilling tool, with the side tools rotating freely and partially

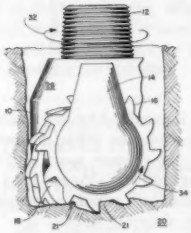


overlapping the pilot tool drilling tool and disposed above the latter in a body which is rigidly connected to the drilling string.

3,743,038
DRILL BIT

John D. Bennett, Denton, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed Nov. 23, 1971, Ser. No. 201,516
Int. Cl. E21b 9/10; E21c 13/02
U.S. Cl. 175—341 **1 Claim**

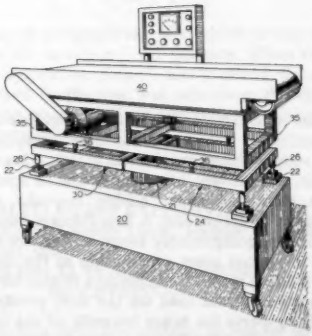


An improved drill bit tooth having a leading tooth face, i.e., the face first contacting the formation being cut, substantially parallel with the axis of rotation of the drill bit cone. The trailing face of the tooth is convexly shaped to act as a fulcrum. This tooth configuration allows the tooth to get under and lift a chip from the formation being cut, rather than sliding it to the side.

3,743,039
WEIGHT SCALE STRUCTURE

Norman H. Vogt, 457 Fisher Court, Clawson, Mich.

Filed Apr. 12, 1971, Ser. No. 133,298
Int. Cl. G01g 11/14, 21/08
U.S. Cl. 177—16 **1 Claim**



A fast acting substantially unmoving and relatively unvarying weight scale structure measuring a proportion of the

power developed by the imposition of the total weight load by imposing ambient portions of the total weight load at random on known weight bearing points on like beams similarly fulcrumed and cumulating known beam power proportions of the unknown weight portions on each beam in a known total proportion of the power and reading the total proportion of power in terms of the total weight load.

3,743,040
COLLAPSIBLE WEIGHING SCALE

William Y. Hutchinson, Chicago, and Walter P. Kusmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.

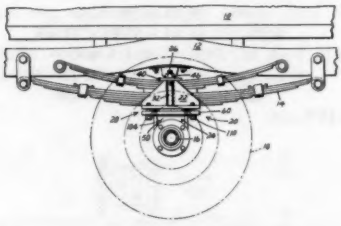
Filed May 18, 1972, Ser. No. 254,767
Int. Cl. G01g *21/00*
U.S. Cl. 177—126 **7 Claims**

A weighing scale is provided having a number of features including a folding column or pillar, a new type of weighing mechanism, a new type of beam scale, and a new type of knob assembly for weight indicating means for a beam scale, all arranged in a compact form which is completely portable and adapted for packing, shipping and storage.

3,743,041
TRANSDUCER BEAM ASSEMBLY

John A. Videon, 1336 S.E. 38th Place, Gainesville, Fla.

Filed Sept. 22, 1972, Ser. No. 291,327
Int. Cl. G01g *19/08*
U.S. Cl. 177—136 **11 Claims**

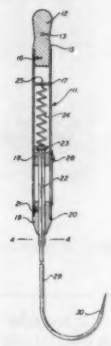


For use on a vehicle which includes an axle and a spring, a load-measuring transducer assembly comprising first and second support members secured to the spring and the axle of a vehicle, respectively, in vertically spaced apart relationship, and an elongated beam having opposite ends disposed horizontally therebetween. A first fulcrum means is provided for pivotably, compressibly supporting the beam at the ends thereof in spaced apart relationship to the first member. A second fulcrum means for applying a flexing force to the beam in proportion to the load on the axle pivotably and compressibly supports the beam inwardly of the ends thereof in spaced apart relationship to the second support member. First and second coupling means pivotably couple the ends of the beam to the first member and the beam to the second member adjacent the second fulcrum means, respectively. A strain measuring means for measuring the flexing strain of the beam is mounted thereon.

3,743,042
GAFF-SCALE

Karl Hilterhaus, 19 Coeyman Avenue, Nutley, N.J.

Filed Sept. 11, 1972, Ser. No. 287,797
Int. Cl. G01g *3/02*
U.S. Cl. 177—233 **4 Claims**



A gaff-scale provided with a tubular body, slidably enclosing a generally rectangular rod extending through a generally rectangular passage at the end of the body; and the rod terminating in a sharp hook; the end of the rod within the body suspended from a spring; an index associated with the rod visible outside the body as it traverses a series of weight calibrations on the body.

3,743,043
TRANSMISSION AND STEERING SYSTEMS FOR VEHICLES PROVIDED WITH NON-STEERABLE WHEELS

Yvan Gelinas, 1860 Principale St., Lac Bellemare, Quebec, Canada

Filed May 27, 1971, Ser. No. 147,338
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.2 **2 Claims**

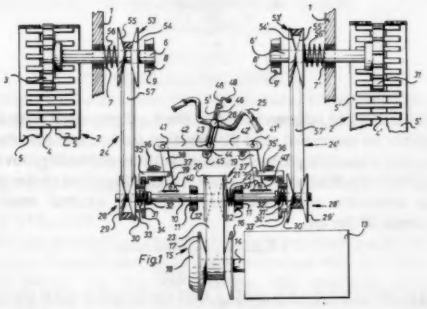


Fig.1

A transmission and steering system for vehicles having non-steerable wheels, for instance a two-track vehicle. The system comprises a steering member, such as a bicycle handle-bar, rotatably mounted in the vehicle and controlling in inverse manner a pair of variable diameter pulley transmission units, each connected to a non-steerable driving wheel or sprocket of the vehicle and each driven by the vehicle engine, whereby turning of the steering member progressively decreases the

rotational speed of one driving wheel of the vehicle, while increasing the rotational speed of the other driving wheel, in order to obtain a smooth and progressive turning movement. The system is preferably connected to the engine through a centrifugally-operated variable diameter pulley and belt system, in order to automatically and progressively vary the transmission ratio between the engine and the vehicle driving wheels as a function of the engine speed. A manual device mounted on the steering member for adjustment by the driver, enables to vary the turning radius of the vehicle for a given angular position of the steering member.

3,743,044

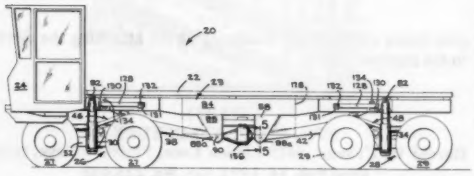
ELEVATING PLATFORM TRANSPORTER

Wesley W. Scheele, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed June 7, 1971, Ser. No. 150,480

Int. Cl. B60g *19/06*

U.S. Cl. 180—41 **4 Claims**



An article transport vehicle for loading and unloading cargo aircraft has an elevating article-supporting bed which carries on its underside power means for adjusting the disposition of the bed and power means for motivating the vehicle. The bed is uniquely supported on tandem wheel-carrying axles so that it can be elevated to any desirable level and still be stabilized with respect to vertical, side, or fore and aft loads. The bed also possesses roll and pitch capabilities for use on uneven terrain.

3,743,045

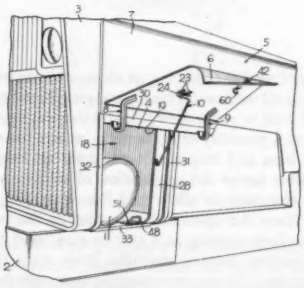
ENGINE HOOD LATCH

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 29, 1971, Ser. No. 167,096

Int. Cl. B62d *25/12*

U.S. Cl. 180—69 R **10 Claims**



A self-sealing latch for a side panel of an engine hood enclosing an engine compartment.

3,743,046

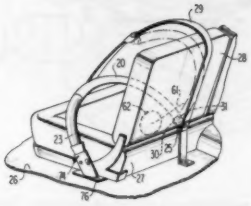
PASSIVE RESTRAINT FOR VEHICLE PASSENGERS

Barbara G. Rothschild, 2134 Springdale Drive, Columbus, Ga.

Continuation-in-part of Ser. No. 108,075, Jan. 20, 1971, Pat. No. 3,712,401. This application July 9, 1971, Ser. No. 161,180

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 C **11 Claims**



A seat associated belt-type restraint for passenger vehicles stands automatically in an open position. When the passenger places his weight on the seat, a pressure device causes the restraint to fall to the closed or active position. When the vehicle electrical system is energized, the restraint is automatically locked and adjusted to the proper size. When the electrical system is de-energized, the restraint returns automtically to the standing inactive position. No positive steps by the passenger are required to operate the restraint.

3,743,047

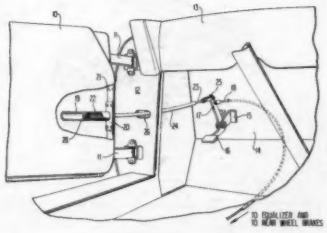
DOOR-OPERATED BRAKE FOR AUTOMOBILES

August A. Dapolito, Jersey City, N.J., assignor to Michael A. Marchisano, Long Island City, N.Y., a part interest

Filed Sept. 15, 1970, Ser. No. 72,404

Int. Cl. B60t *7/12*

U.S. Cl. 180—111 **4 Claims**



The emergency or parking brake of a vehicle is biased by a spring means to the active or "on" position. When the automobile door adjacent the driver's seat is closed, the spring means is rendered ineffective, but whenever the door is opened, the spring means is able to apply the brake automatically for the purpose of avoiding accidents.

3,743,048

SOUND MUFFLER FOR EXPLOSIVE DEVICES

Andrew G. Bakoledis, Clinton, Conn., assignor to USM Corporation, Boston, Mass.

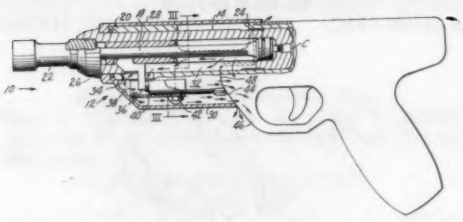
Filed May 23, 1972, Ser. No. 256,087

Int. Cl. F01n *1/08*

U.S. Cl. 181—53 **5 Claims**

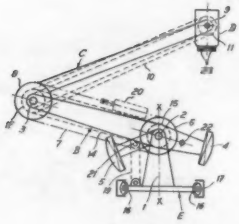
A one-piece hollow enclosure slidably or fixedly mounted over the cooperating housing and barrel of an explosive handheld device, such as a powder actuated fastener driving tool,

reduces the noise of an exploding charge, provides good heat dissapation, and facilitates barrel opening and closing. High



pressure gases are allowed to exhaust with gradual expansion, reversal of general flow direction, and turbulance.

3,743,049
LIFTING DEVICE WITH SWINGING ARMS
Tullio Levrini, Via Turati 26, Milan, Italy
Filed July 20, 1971, Ser. No. 164,334
Claims priority, application Italy, July 29, 1970, 28039 A/70
Int. Cl. E04g *1/00*
U.S. Cl. 182—2 **11 Claims**



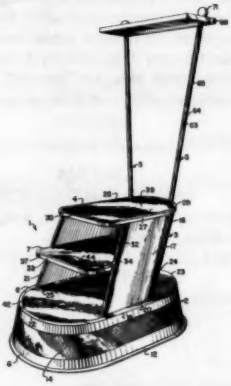
The device comprises two arms B and C articulated to each other by means of pivot 3 and the outer ends of said arms are retained respectively by a base frame E and by the ends of platform D. Furthermore, said arms are combined with counterweights 4 and 5 which perform a swinging motion around pivot 2 which connects said arms to base-frame E. The first counterweight 4 is retained by the first arm, whereas the second counterweight 5 is actuated by the swinging motion of the second arm by means of transmission members 7 and 14.

3,743,050
STOP FALL POLE CLIMBING DEVICE
Jay Roger Danz, P.O. Box 300, Johnson City, Tex.
Filed Aug. 16, 1972, Ser. No. 280,955
Int. Cl. A62b *35/00*; A63b *27/00*
U.S. Cl. 182—9 **9 Claims**

A safety device comprising a roller linked chain for encircling a pole and a spring locking means for retaining the chain in a fixed postion and further associated spur for engaging the

pole being climbed and a safety ring for attaching the device to the climber.

3,743,051
STEP STOOL STRUCTURE
Harold W. Cramer, 8419 Linden Lane, Prairie Village, Kans.
Filed Feb. 14, 1972, Ser. No. 225,928
Int. Cl. A47c *9/02*
U.S. Cl. 182—15 **14 Claims**



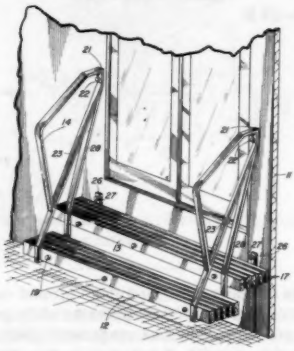
A step stool structure having an elongate base with a flat top and a peripheral wall and a floor-engaging member at the bottom of said wall to resist movement when engaging the floor. The base has a plurality of collapsible rollers for rollably supporting the base and step structure under no load conditions and collapsible under the application of relatively slight pressure to the structure to allow said floor-engaging member to engage the floor. An upstanding support on the base member having a platform serving as a seat or step, said base and upstanding structure having multiple steps with the platform being the top step. Supports extending upwardly from the platform are removably mounted on the structure and adapted to be engaged by portions of a person on the structure. A form of the support being elongate posts to be grasped by a person. A shelf may be mounted on the upper portion of two such posts for holding articles.

3,743,052

SUSPENDED STAIRS

Arthur Muzer, 33 Krattiger Court, West Milford, Butler, and Adam Muzer, Madison Avenue, West Milford, New Foundland, both of N.J.

Filed Mar. 6, 1972, Ser. No. 231,898
Int. Cl. E06c 9/02
U.S. Cl. 182—93 3 Claims



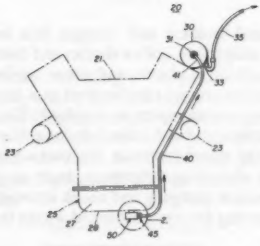
Two embodiments of a suspended stairway are disclosed. In the first embodiment a single step formed from slats and spacers is suspended by a pair of iron straps which are secured to a wall. The straps extend from an upper securing position diagonally down to, around and under the steps terminating behind and above the step at a second securing position. Each of the straps have formed integrally therein a handle portion. The second embodiment extends the concepts of the first embodiment to a multiple stair stairway.

3,743,053

MOTORIZED CRANKCASE OIL DRAINAGE SYSTEM

George T. Kuklewicz, 3741 Fullerton Avenue, Chicago, Ill.

Filed Jan. 27, 1971, Ser. No. 110,105
Int. Cl. F01m 11/04
U.S. Cl. 184—1.5 3 Claims



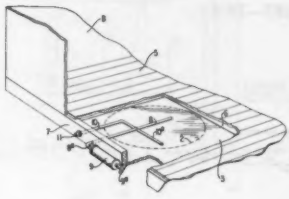
A modified drain plug replaces the standard drain plug in an internal combustion engine crankcase and is coupled by a hydraulic conduit to an electric motor-driven pump for draining oil from the crankcase; a drain passage through the modified crankcase drain plug accommodates therein a spring-biased check valve ball which cooperates with a valve seat in the drain passage for normally closing the drain passage to prevent accidental drainage of oil therethrough.

3,743,054

TRAILER FIFTH-WHEEL LUBRICATION

Ernie C. Jones, Jr., Route 6, Box 348, Nacogdoches, Tex.

Filed July 6, 1971, Ser. No. 160,025
Int. Cl. B62d 53/00
U.S. Cl. 184—14 3 Claims



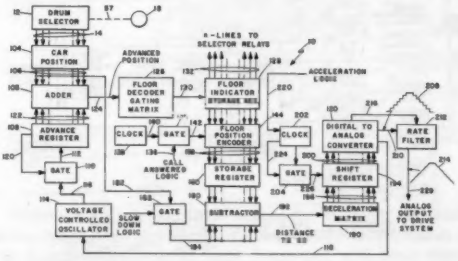
The fifth-wheel construction for connecting a trailer body to a tractor includes a lower plate carried by the tractor and an upper plate carried by the trailer body. The upper plate carries the king pin engaging said lower plate. A lubricating tube is disposed within the trailer body above the upper plate and has discharge openings therein registering with holes through the upper plate disposed within the area of the lower plate and adjacent the king pin. The outer end of the tube extends to the front exterior of the trailer body, and fittings are provided at the outer end of the tube for forcing lubricant into the tube for distribution between the plates and around the king pin.

3,743,055

ELECTRONIC MOTION CONTROL SYSTEM FOR ELEVATORS

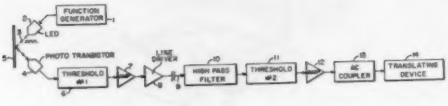
William R. Hoelscher, La Mesa, and Alvin J. Vildibill, El Cajon, both of Calif., assignors to United States Elevator Corporation, Spring Valley, Calif.

Filed Aug. 4, 1971, Ser. No. 169,106
Int. Cl. B66b 1/16
U.S. Cl. 187—29 R 10 Claims



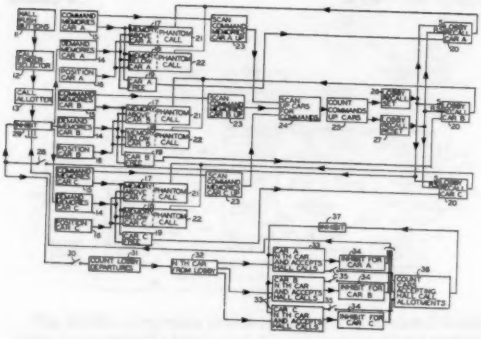
An elevator control system that utilizes a digital signal representative of the car position to provide the necessary information inputs to the selective logic system and motor control so that a smooth acceleration to maximum velocity and deceleration to stop at a selected floor. A drum selector is utilized to produce the digital number corresponding to elevator position. The motion input to this drum selector is linked to actual elevator motion. The system includes electronic provision for simulating the advance of the car position an amount dependent on it's velocity and locks out all floors behind that advanced position in order to allow adequate time for deceleration. The velocity command is compared to actual velocity and the power control section called on to make up any difference. Differences persisting for a period of time produce increasing commands in response, while damping means prevent overshoot.

3,743,056
FAIL-SAFE DETECTOR
William E. Zitelli, and Charles L. Winkler, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 19, 1971, Ser. No. 144,726
Int. Cl. B66b *1/36*
U.S. Cl. 187—29 R **12 Claims**



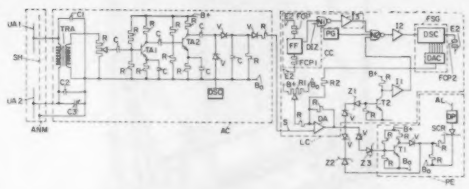
A fail-safe position detector in which a pulsed light source induces corresponding electrical pulses in a light responsive receiver circuit when the components are in a desired relative position. The pulses generated in the receiver circuit are effective to operate a translating device through an isolation transformer. Threshold devices at critical junctures in the circuit eliminate marginal operation. The components are selected so that failure of one component or a combination of components will not cause false triggering of the translating device.

3,743,057
ELEVATOR RECALL CONTROL WITH INTERFLOOR TRAFFIC CONTROL
Donivan L. Hall; Robert J. Lauer, and Gerald D. Robaszkiewicz, all of Toledo, Ohio, assignors to Reliance Electric Company, Euclid, Ohio
Filed June 10, 1971, Ser. No. 151,697
Int. Cl. B66b *1/20*
U.S. Cl. 187—29 R **28 Claims**



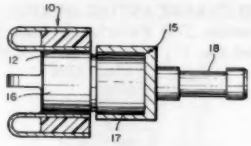
An elevator control for systems in which cars ordinarily run only to those hall calls specifically assigned to the individual cars wherein cars are automatically recalled to a primary service floor at which there is a high rate of passenger entries. The service from the primary service floor is enhanced by restricting response of the cars to hall calls. One restriction level is to eliminate service to all hall calls, another to eliminate service to certain hall calls, a third to permit only a limited number of cars departing from the primary service floor to serve hall calls in either the entire range or the restricted range. Where there are special floors served by less than all cars in the group, the cars permitted to serve hall calls can be made to include cars capable of serving those special floors. Cars are recalled only when they have concluded their service in traveling from the primary service floor. Recall service can be established by manual or clock controlled switch or by sensing a condition indicative of a need for such service. One such condition is a count of car calls in ascending cars where recall is to a lower main floor.

3,743,058
SELF-ADJUSTING PROXIMITY DETECTING APPARATUS
Lew H. Diamond, Massapequa, N.Y., assignor to Otis Elevator Company, New York, N.Y.
Filed Oct. 14, 1971, Ser. No. 189,294
Int. Cl. B66b *13/26*
U.S. Cl. 187—29 R **16 Claims**



The effects of undesirable circuits to ground on the operation of elevator door protective apparatus of the proximity detection type are reduced by an arrangement which responds to such undesirable circuits, if any, during the opening of the door and prevents them from effecting the operation of the protective apparatus during closing movement.

3,743,059
MECHANICAL ISOLATOR AND DAMPER
Robert E. Morse, Palos Verdes Estates, and Anthony A. Rizzo, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Nov. 15, 1971, Ser. No. 198,638
Int. Cl. F16f *7/00*
U.S. Cl. 188—1 B **6 Claims**

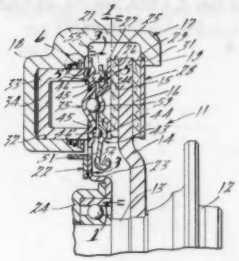


A mechanical isolator and damper has been developed which can be adapted to isolate shocks and damp vibrations to ball bearings, flexural pivots, and other similar rotating and oscillating devices. It can also be used as a bushing for shafts where isolating and damping is required. The damper comprises concentric outer and inner tubular collars connected by leaf springs, the space between the two collars being filled with a shock absorbing substance, such as an elastomeric material. Vibration damping and shock absorption is provided for fixed or moving devices positioned within the inner collar.

3,743,060
SERVO ACTION PARKING BRAKE WITH ROTARY ACTUATOR
Paul G. Hendrickson, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Oct. 27, 1970, Ser. No. 86,118
Int. Cl. F16d *55/46*
U.S. Cl. 188—72.2 **6 Claims**

A sliding caliper disk brake assembly incorporating a hydraulic, service actuator and a mechanical, parking actuator. The mechanical actuator includes an annular cam that is

disposed concentrically with the piston of the hydraulic actuator to provide a compact assembly. An arrangement is also incorporated for generating a self-energizing force when the brake is mechanically actuated.



3,743,061

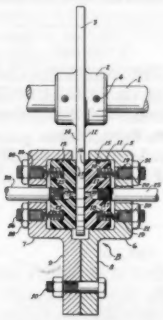
AIR RELEASED FRICTION DEVICE

Robert J. Brown, 1100 Richman Knowl, Fullerton, Calif.

Division of Ser. No. 838,747, July 3, 1969, abandoned. This application May 24, 1971, Ser. No. 146,416

Int. Cl. F16d *65/24, 65/78*

U.S. Cl. 188—170 **4 Claims**



A friction brake including a rotary disc and a stationary brake unit having a body located adjacent to the periphery of the disc and straddling the periphery of the disc. The body has opposed piston chambers and brake pads spring loaded into engagement with the disc. Air is admitted through the pads between the opposing faces of the pad and the disc to free the disc for rotation.

3,743,062

BRAKE HEAD-CENTERING DEVICE FOR RAILWAY BRAKE APPARATUS

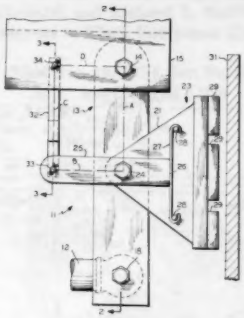
Jack E. McIlroy, Le Ray, N.Y., assignor to General Signal Corporation, New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,774

Int. Cl. F16d *65/06*

U.S. Cl. 188—212 **5 Claims**

The disclosure concerns brake apparatus for railway cars and locomotives in which the brake head is journaled on a pivoting hanger and is centered by a biasing spring. A four-bar parallelogram linkage orients the seat of the biasing spring with respect to a portion of the vehicle so as to maintain alignment of the head relative to the braking surface of the wheel during pivotal movement of the hanger.



3,743,063

DRUM BRAKE FOR VEHICLES

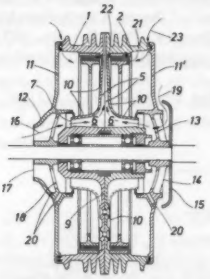
Richard Heydenreich, Riemerling; Hans-Gunther V.D. Marwitz, and Hubert Blechschmidt, both of Munich, all of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Filed Apr. 26, 1971, Ser. No. 137,476

Claims priority, application Germany, Apr. 28, 1970, P 20 20 668.2

Int. Cl. F16d *65/10*

U.S. Cl. 188—218 R **31 Claims**



A device for venting drum brakes for vehicles, especially motorcycles, in which the brake drum essentially consists of two axially divided drum halfs connected with each other, whereby at least in one of the two mutually facing regions of the drum halves essentially radially directed air cooling ducts are provided whose air inlets are arranged within a region, as close as possible to the axis of the drum, and whose air outlets are arranged within a region that is as far as possible from this axis.

3,743,064

DUAL STATION THROTTLE AND SERVICE BRAKE CONTROL MEANS

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

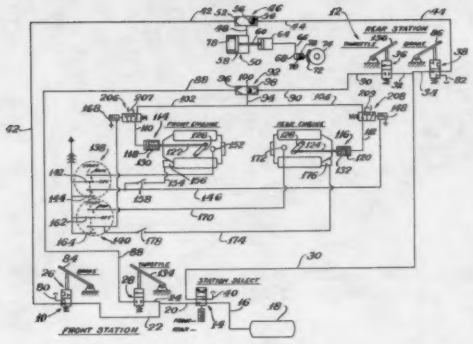
Filed Feb. 9, 1972, Ser. No. 224,700

Int. Cl. B60k *29/02*

U.S. Cl. 192—3 R **8 Claims**

A means for controlling the service brakes and both engines of a dual drive train vehicle having a pair of operator stations. Each station has manually actuated brake and throttle valves capable of metering air pressure respectively to the service

brakes and an engine control means. A selector valve directs air pressure to the valves in only one station and check valve means isolates the service brakes and the engine control



means from the valves in the other station. An electrical circuit is provided to permit independent control of either of the two engines during starting.

3,743,065

PAWL CLUTCH

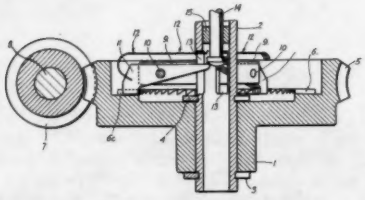
Miloslav Rencin; Milos Mladek, and Ladislav Bures, all of Usti Nad Orlici, Czechoslovakia, assignors to Elitex Zavody Textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed Dec. 13, 1971, Ser. No. 207,073

Claims priority, application Czechoslovakia, Dec. 14, 1970, 839470

Int. Cl. F16d *41/12, 11/04*

U.S. Cl. 192—20 **9 Claims**



A clutch, particularly for use in spinning machines, has an outer drive part mounted for rotation on the hollow shaft of an inner driven part. The shaft supports a set of angularly spaced radial holders supporting groups of coupling pawls for angular movement to and from a coupling position engaging an annular inner gear of the drive part for coupling the drive part with the driven part. An actuating rod in the interior of the hollow shaft, moves all coupling pawls out of the coupling position into which the coupling pawls are urged by springs. Preferably, a group of thin coupling pawls cooperates with each tooth of the annular inner gear of the drive part so that the clutch engages after a relative displacement between the drive part and the driven part not greater than the thickness of a pawl.

3,743,066

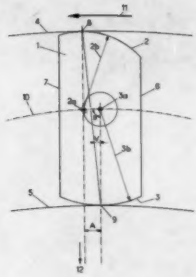
FREE WHEEL DRIVE

Pierre de Lacroix De Lavalette, Paris, and Daniel Hein, Choisy-le-Roi, both of France, assignors to SKF Compagnie D'Applications Mecaniques, Clamert, France

Filed July 5, 1972, Ser. No. 269,224

Int. Cl. F16d *41/07*

U.S. Cl. 192—41 A **2 Claims**



Free wheel drive comprises two concentric cylindrical races and wedging cams maintained in contact with said races by a cylindrical cage and resilient means. The wedging cams have two cylindrical surfaces, one in contact with each of said races. The axes of said cylindrical contact surfaces and the common axis of the two races are generatrices of a cylindrical locus, the diametral plane of which is defined by the common axis of said races and the axis of the cylindrical surface of one of the cams in contact with the internal race.

3,743,067

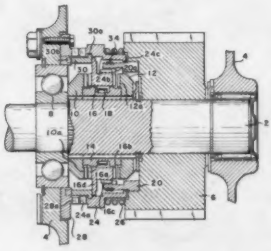
REVERSIBLE OVERRUNNING CLUTCH WITH AUTOMATIC SHIFT CONTROL

Ronald D. Bokovoy, Bloomfield Hills, Mich., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Dec. 2, 1971, Ser. No. 204,117

Int. Cl. F16d *41/00, 11/04, 23/08*

U.S. Cl. 192—43 **8 Claims**



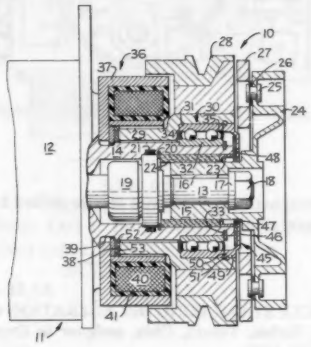
An improved reversible overrunning clutch of the type including a central driver member that is axially shiftable by helical spline means between clutch engaged positions relative to axially spaced forward and reverse clutch members mounted on an output shaft. The invention is characterized by the provision of automatic shift control means operable in accordance with the direction of rotation of the rotary input drive means to shift the central driver member toward a readiness position immediately adjacent the appropriate clutch member, thereby insuring the correct directional operation of the unit.

3,743,068

DUAL SEAL ARRANGEMENT

Ralph Westervelt, Pekin; Lawrence F. Fratzke, East Peoria, and Ronald C. Stump, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1971, Ser. No. 209,561
Int. Cl. F16d 27/06; F16k 41/16
U.S. Cl. 192—84 C 24 Claims



A dual seal arrangement for a drive mechanism of the type having a rotating member and a radially spaced stationary member with a bearing mounting the rotating member on the stationary member, as in a clutch assembly for an air conditioning compressor. The seal arrangement includes a seal support member carried by the rotating member on one side of the bearing, and a rotary fluoroplastic-coated felt seal member secured to the support member for sealing engagement with the stationary member.

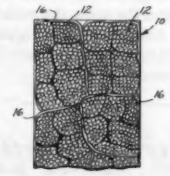
A stationary seal member is mounted on the stationary member in spaced relationship to the rotary seal member and on the opposite side of the bearing from the rotary seal member for sealing engagement with the rotating member. The dual seal arrangement thus provides a protective barrier against the entrance of foreign matter into the bearing from either side.

3,743,069

GLASS FIBER FRICTION ELEMENT

Irvin Barnett, Martinsville, and Walter B. Peters, South Orange, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,410
Int. Cl. F16d 13/60
U.S. Cl. 192—107 M 18 Claims



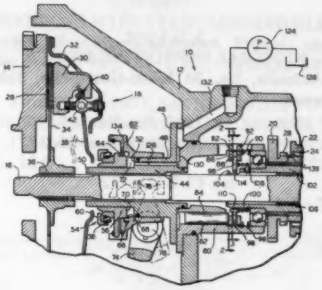
A friction material, such as a clutch facing, formed of continuous bundle of parallel continuous glass fibers spirally or randomly wound upon themselves in the form of an annular disc impregnated with heat curable cement and having brass wires helically disposed around the bundles.

3,743,070

CLUTCH WITH BRAKE HAVING TORSIONAL RESILIENCE

Wayne R. Howard, and Richard L. Ratliff, both of Jackson, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 10, 1971, Ser. No. 206,697
Int. Cl. F16d 67/04
U.S. Cl. 192—113 R 15 Claims



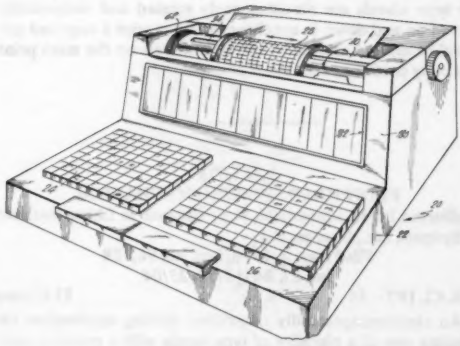
A transmission is disclosed having a clutch brake for holding the transmission main shaft from rotation when the transmission main clutch is disengaged. The clutch brake includes a friction disc rotatable about the axis of te main shaft and interleaved between a pair of friction discs connected to the housing. A tab extending from the rotatable friction disc may engage the main shaft so that the shaft may not rotate when the rotatable friction disc is braked, but the tab does permit a certain amount of angular pivotal movement between the shaft and the rotatable friction disc. A torsional coiled wire spring resiliently connects the rotatable friction disc with the main shaft and biases the shaft toward a centered position relative to the disc tab so that the shaft may pivot slightly in either direction while brake from rotation to permit the various geared and splined components of the transmission to be shifted into engagement with their mating components regardless of the angular position at which the clutch brake stops the main shaft.

3,743,071

INTER LINGUAL TYPEWRITER

Man Shan Luk, Brooklyn, N.Y., assignor to Interlingual Cultural Machinery, Inc., New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,250
Int. Cl. B41j 3/50
U.S. Cl. 197—1 A 9 Claims



A interlingual typewriter having an assembly for aligning a type character on a type drum for engagement by a striker.

The drum is slidably mounted on a roller platen removably rotatably mounted on the typewriter chassis. A first keyboard includes a plurality of keys for actuating a mechanism to axially align the drum on the roller platen. Another keyboard includes a plurality of keys for rotating the roller platen to arcuately align the roller platen and hence the drum. The striker is actuated through a mechanism operated by the keys of the first keyboard.

3,743,072

NUMERAL IMPRINTING DEVICE

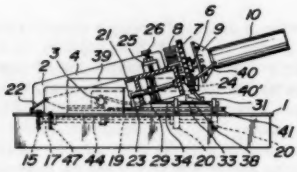
Yasusada Akimoto, No. 34 Mishi-Goken-cho, Shinjuku-ku, Tokyo, Japan

Filed Jan. 18, 1972, Ser. No. 218,711

Claims priority, application Japan, Jan. 26, 1971, 46/2550; Sept. 17, 1971, 46/84594

Int. Cl. B41j *1/22*

U.S. Cl. 197—6.4 **6 Claims**



A check writer comprising at least two frames pivotally supported by a common pivot shaft and rotatably supporting shafts, a main type wheel secured to one of the shafts and carrying a series of types arranged circumferentially thereabout and representing numerals and symbols to be imprinted on a main print portion of a sheet of paper such as a check, receipt, bill, etc., at least one copy type wheel secured to the other shaft and carrying a series of types arranged circumferentially thereabout and representing numerals and symbols to be imprinted on a copy portion of the sheet of paper, an ink pad normally is kept in contact with that type of each type wheel which is in opposition with each of the main print and copy portions of the sheet of paper, and a mechanism for interlocking the type wheels in a manner such that when a handle secured to the main type wheel supporting shaft is operated the type wheels are simultaneously rotated and reciprocally moved up and down in synchronism to imprint a required numeral or symbol carried by the type wheels on the main print and copy portions of the sheet of paper.

3,743,073

PRINT HEAD SHIFTING MECHANISM

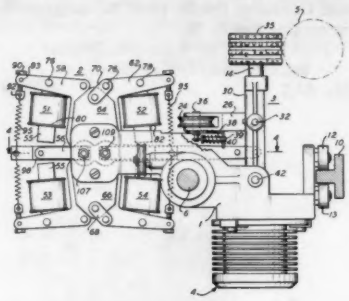
Guillermo Perez, Bloomfield, N.J., assignor to Litton Business Systems, Inc., Orange, N.J.

Filed Nov. 2, 1970, Ser. No. 86,159

Int. Cl. B41j *1/32, 23/04*

U.S. Cl. 197—55 **11 Claims**

An electromagnetically controlled shifting mechanism for aligning one of a plurality of type bands with a printing position. The shifting mechanism includes selectively energizable electromagnets that attract a pivotably mounted linkage which is connected to the shaft which supports the print head. The electromagnets are located two above and two below the linkage so that by the energization of various combinations of



the electromagnets the print head can be shifted between the four horizontal printing bands.

3,743,074

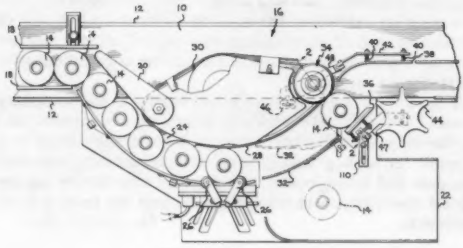
ARTICLE STABILIZING DECELERATION GATE

Thomas B. Sorbie, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 30, 1971, Ser. No. 185,053

Int. Cl. B23q *5/22*; B65g *37/00*

U.S. Cl. 198—19 **5 Claims**



Apparatus to slow articles in a stable manner as they exit from an inspection device in which the articles are precessed out of the inspection device by means of a continuously moving, side-engaging belt and a fixed rail. At the exit of the article inspection device, a pulley is driven by the belt which is used to move the articles through the device. The pulley is mounted on the outer ring of a rolling element bearing which has its rolling elements restrained within a vertically elongated cage. A deceleration disc having a radius larger than the pulley is driven by the elongated cage. Due to the difference in radii of the outer ring and the cage, the pulley will rotate faster than the deceleration disc. Thus, as articles are brought into contact with the deceleration disc as they exit the inspection device, they will be slowed.

3,743,075

CIGARETTE FILTER FEED

Warren A. Brackmann, Cooksville, and Daniel Dilanni, Toronto, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada

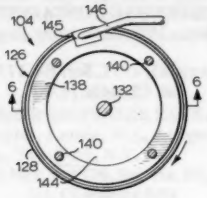
Filed Nov. 23, 1971, Ser. No. 201,411

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 R **5 Claims**

Cigarette filters of two lengths are fed as an ordered stream to a filter applying machine. The feed is formed by subjecting

a scrambled or jumbled mass of the filters to centrifugal forces in a shallow bowl, the filters thereby forming a stream around



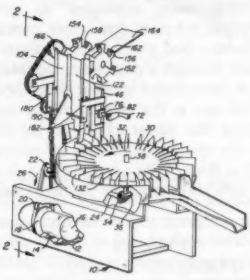
the inner periphery of the bowl, and removing filters from the stream.

3,743,076

BOTTLE ORIENTOR

Chester D. Hooks, 1381 E. Hoyt Avenue, St. Paul, Minn.

Filed Aug. 2, 1971, Ser. No. 168,089
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AB **5 Claims**



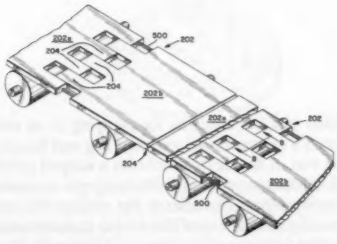
A mechanical bottle orientor is disclosed in which bottles, having their necks disposed in either of two directions and aligned horizontally are tipped to be oriented with their bottoms downwardly and deposited in pockets in a rotary table in position to be filled.

3,743,077

VARIABLE SPEED CONVEYOR

Andrew G. Hammitt, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 761,730, Sept. 23, 1968. This application Dec. 28, 1970, Ser. No. 102,071
Int. Cl. B65g *21/12*
U.S. Cl. 198—110 **2 Claims**



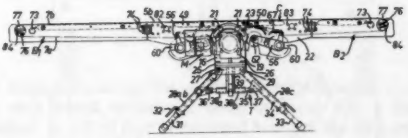
A variable speed conveyor having an endless conveyor member composed of longitudinally spaced load-bearing sections which are relatively movable with at least a component of relative motion parallel to the conveyor path. The conveyor member is driven endwise in a manner such that the velocity of each load-bearing section parallel to the conveyor path varies along the path between the conveyor in-feed and out-feed stations to maximize the average conveyor velocity along the path and/or to provide the conveyor with different in-feed and out-feed velocities. The conveyor is useful both as an article conveyance and a pedestrian conveyance.

3,743,078

CHAIN CONVEYORS WITH STANDARDIZED ELEMENTS

Pierre Pittoreau, Boulogne-Billancourt, France, assignor to Societe des Aciers Fins de L'Est, Boulogne-Billancourt, France

Filed Dec. 9, 1971, Ser. No. 206,318
Claims priority, application France, Dec. 11, 1970, 7044782
Int. Cl. B65g *15/60, 41/00*
U.S. Cl. 198—121 **2 Claims**



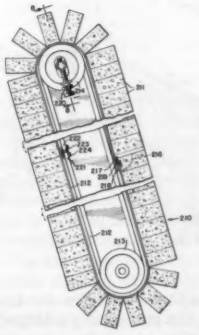
This conveyor comprises standardized, interchangeable elements, namely : a motor and reduction unit, a driving shaft operatively connected to the output shaft of said unit and carrying at least one sprocket for driving a chain, a bearing supporting frame structure, a central body comprising a swivel-mounted frame structure with idler sprockets and chain tensioning devices, said central body comprising a pair of said flanges which bear across a central notch thereof upon outer housings of the frame structure, the upper portion of each flange being formed with tapped holes receiving screws for securing said frame structure which is provided with arcuate slots concentric to the driving shaft and engageable by said screws, thus permitting the adjustment of the inclination of said frame structure in relation to the axis of the driving shaft which remains constantly horizontal.

3,743,079

EGG ESCALATOR BELT ASSEMBLY

Anthony J. Siciliano, Vineland, N.J., assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,248
Int. Cl. B65g *15/30, 15/14*
U.S. Cl. 198—193 **7 Claims**



An escalator belt assembly for transferring eggs or like objects to different elevational levels including an array of outer resilient deformable article contacting, carrying and transfer-

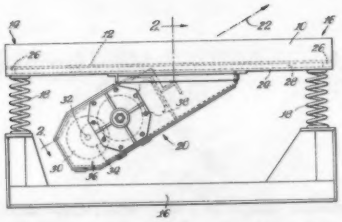
ring members and an inner endless transmission member in driving relationship with at least two wheel members. The array of outer resilient deformable article of contacting, carrying and transferring members in operation include portions extending and moving in a non-horizontal direction and cooperating with a belt having a portion extending parallel thereto and providing a sandwich-like relationship for clamping eggs or like objects therebetween. The transmission member being in the form of a chain or a V-belt.

3,743,080

SOUND DEADENER FOR VIBRATORY CONVEYOR

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed July 6, 1971, Ser. No. 159,807
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 BA **6 Claims**



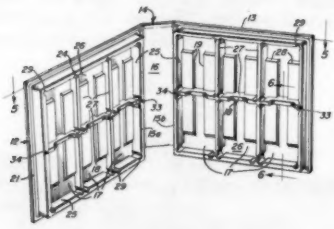
A vibratory conveyor including structure for deadening sound incurred during operation thereof by reason of the contact of a conveying surface with articles being conveyed. A chamber is provided underneath the conveying surface and in abutment therewith and the chamber is substantially sealed. An inlet near the input end of the conveying surface is provided to the chamber to permit entry of particles thereinto with the result that the vibrating mechanism for the vibratory conveyor will compact the particles against the underside of the conveying surface to preclude the same from vibrating at a frequency within the audible range. A method for practicing the invention is also specified.

3,743,081

CASSETTE ALBUM CONTAINER

Kurt W. Roberg, Tenafly, and Ernest F. Marotti, Old Bridge, both of N.J., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,814
Int. Cl. A45c *11/00*; B65d *85/67*
U.S. Cl. 206—1 R **4 Claims**



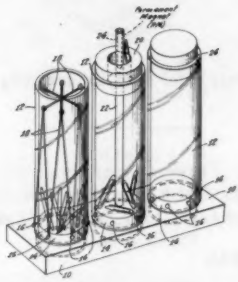
A book-style album container for cassettes of magnetic tape, film or the like comprising a hinged outer cover, and a pair of storage bodies, one on the inner side of each cover leaf, each such body including a plurality of storage cavities, each such cavity adapted to removably and snugly receive an individual cassette and including means to facilitate removal of individual cassettes when desired. The invention also includes a method for making an album container of the type described.

3,743,082

DISPENSING CONTAINER

Nancy A. Herrmann, 2408 Roscomare Road, Los Angeles, Calif.

Filed Aug. 23, 1971, Ser. No. 173,856
Int. Cl. A45c *11/00*
U.S. Cl. 206—1 R **3 Claims**



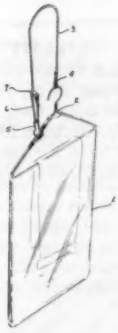
An improved dispensing container is provided for dispensing paper clips, hairpins, and other metallic objects. The container includes a rod which extends from the bottom of the container and through a dispensing opening in the top of the container. A permanent magnet is embedded in the upper end of the rod, and in the vicinity of the opening in the top member, so that the paper clips, or the like may be dispensed through the opening, and with the permanent magnet inhibiting the free flow of the articles through the opening and presenting the articles in an easily reached position.

3,743,083

GARMENT CARRIER

Ernest F. James, 1807 W. Northview, Phoenix, Ariz.

Filed Oct. 14, 1971, Ser. No. 189,102
Int. Cl. A45c *7/00*
U.S. Cl. 206—7 H **2 Claims**



The invention teaches a device for carrying in an over-the-shoulder fashion a conventional garment bag and hanger combination. One end of the device includes a looped portion for coacting with the hanger whereby the hanger is secured to the device. An intermediate portion of the device fits over the shoulder. The other extremity of the device includes a metallic clasp for coacting with one of the legs of the hanger. The intermediate portion of the device joining the looped end and the clasp is adjustable. In operation, the looped portion is connected to the hanger with the intermediate portion extending

upwardly over the shoulder and downwardly to permit the clasp to engage one leg of the hanger. Thereby, the garment bag is dependent from the device and positioned below the wearer's arm socket and between the wearer's arm and side. Thereby, the wearer may support a garment bag without requiring the use of his hands and permits the wearer to use his hands for carrying additional packages and suitcases.

3,743,084

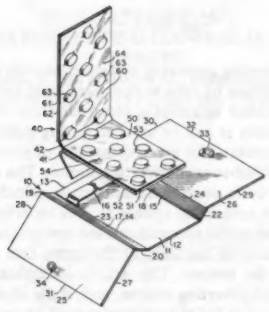
CARRIER-DISPENSER PACKAGE

Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,904

Int. Cl. B65d *83/04*

U.S. Cl. 206—42 **1 Claim**



An article carrying and dispensing package having two interengaging sections. Each of the two sections have selectively stagger arranged convex, article carrying cavities so that when the sections are mated in face-to-face relationship there is intermittent fitting to form a single layer package. The package may include a suitable housing for the mated sections.

3,743,085

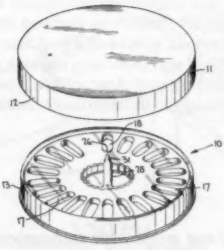
INDIVIDUAL TABLET DISPENSING PACKAGE

Wilbert K. Richert, North Towanda, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,691

Int. Cl. B65d *83/04*

U.S. Cl. 206—42 **3 Claims**



A package capable of dispensing tablets one at a time therefrom comprises a container having a plurality of compartments for each tablet and a movable dispensing lid having an opening for overlying each compartment in sequence. The lid is retained by the container and cooperates with a central cavity therein in such a manner as to insure sequential lid movement.

3,743,086

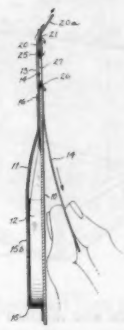
ADHESIVE TAPE DISPENSER PACKAGE

Walter S. Aldrich, Shorewood, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Feb. 5, 1971, Ser. No. 112,985

Int. Cl. B65d *85/67*

U.S. Cl. 206—52 R **3 Claims**



A dispenser package for adhesive tape transported on a carrier web which includes a cover element and a backing member. A roll of tape is enclosed between the two package elements, and a portion of the cover element is utilized in a functional manner to apply pressure against the tape in order to facilitate release of the tape from the carrier web for dispensing of the tape from the package.

3,743,087

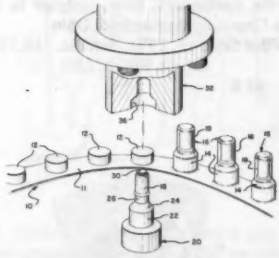
COLD FORMED PLASTIC CONNECTOR HOUSING

Joseph Agusta Wise, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 742,427, July 3, 1968, Pat. No. 3,606,000, and a continuation of Ser. No. 800,682, Feb. 19, 1969, abandoned. This application Aug. 10, 1970, Ser. No. 62,697

Int. Cl. B65d *73/02*; H01r *5/10*

U.S. Cl. 206—56 AB **3 Claims**



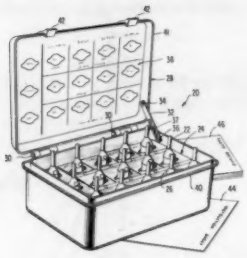
A method and means is disclosed featuring a cold forming of plastic bodies in the form of buttons, pellets or other simple shapes into more complex functional configurations for housing and insulating electrical terminals, mechanical fasteners and the like. The plastic bodies are integrally joined to a thin flexible carrier to facilitate processing. Cold forming is effected by dies brought to bear against the bodies with one of the dies carrying a connector element which forms part of the working die surface. The final forming of the housing deposits or embeds the connector element within plastic material. By making the initial molded configuration of a body topographically similar to the final configuration to reduce the extent of extrusion along a given axis the resulting housing may be made to better withstand subsequent deformation for crimping purposes to terminate electrical leads within the terminal and housing or mechanically fasten other elements together.

3,743,088

DIAGNOSTIC DEVICE AND METHOD OF TREATMENT

Robert I. Henkin, 7705 Savannah Drive, Bethesda, Md.

Filed Jan. 18, 1971, Ser. No. 107,279
Int. Cl. A45c 11/00; B65d 5/50, 57/00, 85/00
U.S. Cl. 206—12 38 Claims



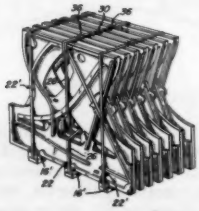
A diagnostic device and method of utilizing the device to diagnose abnormal taste acuity in humans is presented. The device comprises a compact kit having a plurality of bottles with solutions therein useful to test patients according to a forced choice-three stimulus drop technique, two drops being water and the third an unknown stimulus, to determine taste detection and recognition acuity, a forced scale of subjective response to different concentrations of taste stimuli and to screen for genetic defects. Each bottle is numbered and arranged in a sequential array, labeled from normal to abnormal taste acuity through each of the four taste characteristics. The inside cover of the lid has a detailed key to the array containing the concentration and sequence for utilizing each container. The key and the array is visible, during testing, only to the person administering the test. A newly diagnosed disease, idiopathic hypogeusia is also described together with its symptoms and a method of treating the disease by administration of a therapeutic amount of zinc ion orally.

3,743,089

SYSTEM FOR PACKAGING PIANO PLATES

John E. Martin, Springfield, Ohio, assignor to The Wickham Piano Plate Company, Springfield, Ohio

Filed Sept. 15, 1971, Ser. No. 180,705
Int. Cl. B65d 71/00
U.S. Cl. 206—65 B 10 Claims



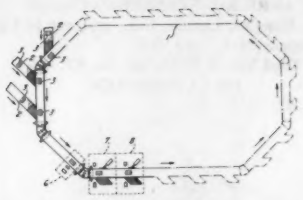
A system for packaging piano plates and like objects providing for said plates to be edge mounted and arranged in a compact spaced relation to have openings therein aligned. The plates are palletized and secured together primarily by a single banding strip. This strip is uniquely applied in the form of a modified Figure Eight having a supplemental binding loop formation at its extremities. Supplemental banding strips may be applied in a confining loop formation as and when needs require.

3,743,090

METHOD AND APPARATUS FOR SELECTIVELY REMOVING PRE-IDENTIFIED ARTICLES FROM A CONVEYOR SYSTEM

Merle F. Brown, 6040 Boulevard East, West New York, and Chien Yang Lu, 6 Vernon Road, Edison, both of N.J.

Filed Apr. 28, 1971, Ser. No. 138,103
Int. Cl. B07c 5/344
U.S. Cl. 209—74 4 Claims



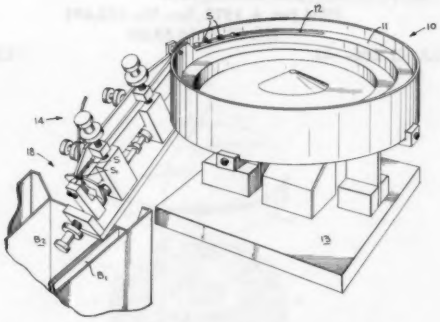
An article-sorting conveyor system is provided in which articles are identified by type as they randomly enter the system and are thereafter selectively removed from the system by type and quantity at one or more diverting stations. This permits pre-set "orders" for given quantities of given types of the articles to be filled at each diverting station. The article carries an identifying code, such as a binary code, which is read when the article first enters the system to give an article identification signal. This signal passes down the system through a series of shift registers, or the like, at the same rate as the article moves down the system. The article identification signal is checked at each diverting station, and, if the identified type of article is necessary for the predetermined quantity of articles at that station, the article is diverted and counted; if not, the article continues on the conveyor. Once diverted, the article identification signal is deleted from the system.

3,743,091

SCREW SORTING MACHINE

Robert E. Fowlkes, Wytheville, Va., assignor to Fowlkes Machine Company, Wytheville, Va.

Filed June 24, 1971, Ser. No. 156,196
Int. Cl. B07c 3/10
U.S. Cl. 209—73 20 Claims



An apparatus and method for automatically sorting screws, bolts or like parts by sensing the contour of the part and directing the same to appropriate collection points is provided. Oscillating kicker fingers urge each screw, or other part, from a gauging station past a gauge head having a thread or other contour matching the part being sorted. The kicker fingers move substantially laterally of the feed path and project the parts into corresponding first and second receiving means. When the first gauge head does not allow passage of the part and thereby a no-go condition exists, then the part is

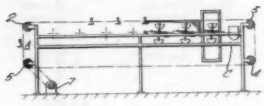
tested or gauged against the second gauge head. The screw is agitated and lifted against an overhead guide rail for encouraging contour alignment and accurate positioning. Each part is gated from the feed conveyor to the gauging station in an automatic fashion by the kicker fingers. Screws or parts not matching either gauge head may in an alternative embodiment be removed from the gauging station along a separate path for further processing. The kicker fingers are interconnected by a spring to provide a resilient characteristic to the urging force to prevent damage to the part or the gauge head. The cooperating gauge heads include a positioning slot that forms the gauging station and each head may be used in any one of four alternate positions.

3,743,092

APPARATUS FOR SORTING FLOWERS ACCORDING TO LENGTH

Edna Levinstein, 9, Ein Hakoreh St., Rishon-le-Zion, Israel

Filed Aug. 27, 1971, Ser. No. 175,473
Int. Cl. B07c *1/14*
U.S. Cl. 209—74 **7 Claims**



A flower grader comprising an elongated framework, a conveyor chain movable near either side thereof and flower-receiving trays constituted by a plurality of spaced flat fingers bent angularly and fixed with their one ends to a bar. The trays are pivotally mounted and tiltable between said conveyor chains said tilting being actuated by photoelectric cells. The open ends of said fingers face the front of the grader and said photo-electric cells extend longitudinally between two adjacent fingers near their mounting. For each flower size there are provided at least three collecting troughs mounted between equi-angularly spaced arms of a support fixed to a shaft. The shaft is rotatably supported between the sides of said framework below each predetermined tilting position and is adapted to be rotated by means actuated by said photo-electric cells after a predetermined quantity of flowers has dropped into the trough located uppermost, so that another trough moves into position to collect the sized flowers. The predetermined quantity of flowers is removed at the side of the framework in a bunch into which the flowers have been assembled. A drawer within each trough aids in forming the bunch of the predetermined number of sized flowers.

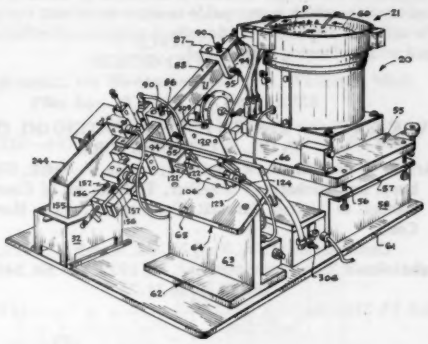
3,743,093

SORTING MACHINES

Adolph V. Klancnik, 1020 Glenville Drive, Glenview, Ill.

Continuation of Ser. No. 82,690, Oct. 21, 1970, abandoned.
This application Jan. 20, 1972, Ser. No. 219,450
Int. Cl. B07c *5/08*
U.S. Cl. 209—80 **10 Claims**

Small parts such as rivets or studs are tested for compliance with dimensional tolerance allowances by being moved through the throat of a caliper device, the throat being defined, at one side, by a fixed surface and at the other side by a moveable surface associated with a switch contact. If a switch is operated a sorting device or gate is positioned to



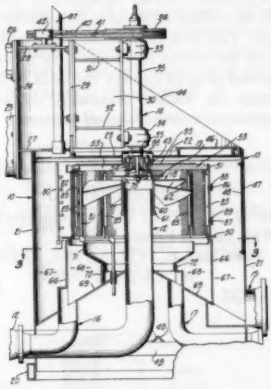
separate the non-complying part from the main stream of acceptable parts.

3,743,094

ROTATING SCREEN SEPARATOR

Philip H. Mook, Huntington Beach, Calif., assignor to Sweco, Inc., Los Angeles, Calif.

Continuation of Ser. No. 42,099, June 1, 1970, abandoned.
This application Dec. 20, 1971, Ser. No. 210,179
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 **8 Claims**



There are disclosed herein equipment and methods for screening and concentrating waste water overflow from combined sewer systems. Exemplary equipment includes a separator employing a substantially cylindrical rotating screen. Influent is piped upwardly into the equipment and deflected outwardly toward the inner surface of the screen in a manner to achieve a desired flow rate and flow pattern of the influent onto the screen. Means are provided for controlling the flow rate and for suitably directing the influent in a plurality of substantially discrete inclined streams toward the inner surface of the rotating screen. The screen is rotated at a speed to achieve a desired centrifugal force. Effluent passes through the screen to an outlet and the remaining concentrate passes to an outlet. A certain amount of the influent splashes from the inner surface of the screen, and is received by a backsplash pan and may be recirculated and rescreened. The screen is in the form of a screen cage having a plurality of removable screen panels for facilitating replacement of damaged screens or changing of screen type or mesh size. Cleaning means is provided for

directing a cleaning fluid periodically at the screen. The methods disclosed involve the manner in which the influent, effluent, concentrate and backsplash are handled, and the manner in which the influent is screened to achieve a fluid concentrate which is pumpable to other treatment equipment for ultimate disposal. Additionally, a sequence of influent feed and screen cleaning is described.

3,743,095

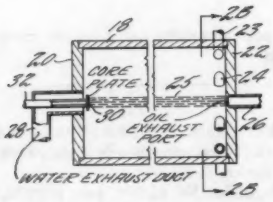
VORTEX FLOW SYSTEM FOR SEPARATING OIL FROM AN OIL-WATER MIXTURE

Arthur E. Mensing, East Hartford; James W. Clark, Glastonbury, and Richard C. Stoeffler, Tolland, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 125,232, March 17, 1971, abandoned. This application Apr. 20, 1972, Ser. No. 246,032

Int. Cl. B01d *21/26*

U.S. Cl. 210—84 **15 Claims**



A vortex separator is used to separate oil from an oil-water mixture which results, for example, from oil spills on a body of water. The separated oil may be stored or otherwise disposed of, while the separated water may be returned to the original body of water. The flow rate of the separated oil through the oil exit port of the vortex separator may be varied by using a movable tapered plug to change the area of the oil exit port. The area may be varied manually, or automatically in response to measurements of the oil content.

3,743,096

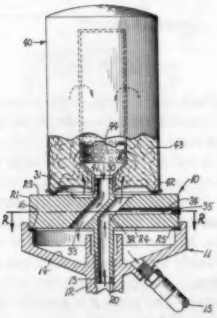
FILTER ADAPTER

Galen E. Harvey, Jr., 339 E. Terrace, and Gary C. Petty, 4872 N. Doon Way, both of Fresno, Calif.

Filed Mar. 6, 1972, Ser. No. 232,067

Int. Cl. B01d *27/00*

U.S. Cl. 210—232 **8 Claims**



An adapter for converting a filter system, having a source of fluid to be filtered and a discharge for filtered fluid, from use with a canister-type filter element to use with a disposable-type filter element, the adapter having a first coupling adapted for connection to the source; a base mounted on the coupling; a second coupling mounted on the base remote from the first coupling and adapted to receive a disposable-type filter element thereon, said element having a discharge opening for sealed attachment to the second coupling and a separate and distinct entrance opening; an input conduit operably interconnecting the first coupling and the entrance opening; and an output conduit operably interconnecting the second coupling and the discharge of the filter system.

3,743,097

DIALYZER

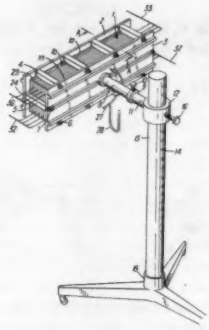
Andre Sausse, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 885,486, Jan. 16, 1969, Pat. No. 3,631,986. This application May 24, 1971, Ser. No. 146,146

Claims priority, application France, Dec. 16, 1968, 68178506

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **3 Claims**



A dialyzer, e.g., to act as an artificial kidney in which rigid or semi-rigid plates are stacked in pairs between supports, and have interposed pairs of semi-permeable membranes. First exchange zones are formed between the membranes and their adjacent plates which are provided with parallel ribs and grooves, and second exchange zones are formed between the membranes of a pair. In order to exert a constant pressure, a flexible-walled bag is located between the outermost plates and a support, over the projected area of the exchange zones.

3,743,098

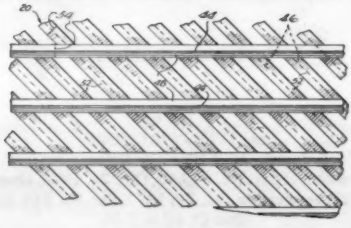
SPIRAL MASS TRANSFER DEVICE WITH LOW FLOW RESISTANCE AND FLUID VOLUME

Felix Jesus Martinez, Palatine, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 23, 1971, Ser. No. 211,412

Int. Cl. B01d *31/00*

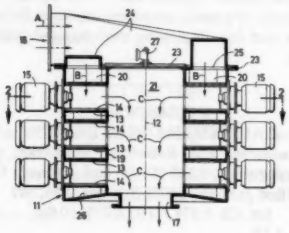
U.S. Cl. 210—321 **12 Claims**



A mass transfer device such as an artificial kidney is disclosed which describes a foraminous screen member supporting and lying against a length of semipermeable membrane of flattened tubular shape. The screen member and membrane

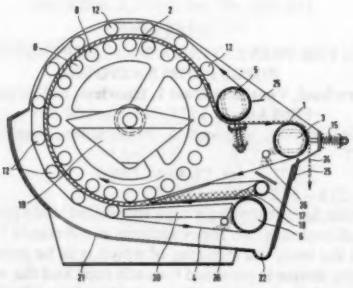
are arranged in a spiral about a core, the screen member comprising first and second sets of spaced parallel strands in separate planes. The sets of strands lie against each other and define an angle thereto, and are connected to each other at their crossing points. One of the sets of strands is disposed in longitudinal relation to the axis of the tubular membrane. The strands of the longitudinally arranged set have center lines which are spaced apart from each other by a distance which is preferably at least twice the corresponding spacing distance between the strands of the other set.

3,743,099
SORTING PRESSURE FILTER APPARATUS
Emil Holz, Eningen, Germany, assignor to Hermann Finckh Metalltuch-Und Maschivenfabrik, Reutlingen, Germany
Filed June 9, 1971, Ser. No. 151,288
Claims priority, application Germany, June 11, 1970, P 20 28 694.6
Int. Cl. B01d *29/38*
U.S. Cl. 210—333 **9 Claims**



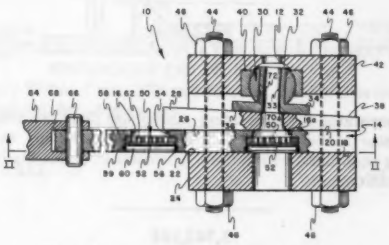
A sorting pressure filter apparatus has a vertical tubular wall forming an inner space and an outer annular space provided with inlet means and outlet means, respectively, and connected by several superimposed annular rows of tubular filters surrounding the tubular wall. The filters project radially from the tubular wall into the outer annular chamber. Each filter is provided with a motor and blades driven by the motor and cleaning the respective filter. In one embodiment, radial walls divide the housing so that pairs of inner and outer space portions are formed, which can be connected in series for consecutive filter operations.

3,743,100
FILTER PRESS, MORE PARTICULARLY FOR DEWATERING SLUDGE IN SEWAGE TREATMENT PLANTS
Albert Bahr, Parallelstrasse 2a, Elversberg/Saar, Germany
Filed June 7, 1971, Ser. No. 150,356
Int. Cl. B01d *33/04*
U.S. Cl. 210—386 **6 Claims**



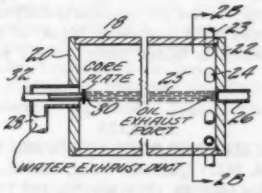
A process for dewatering sludge particularly for dewatering sludge in sewage treatment plant by means of a filter pressbaving belts one at least of which is a filter belt, the sludge being conveyed around a drum between belts both of which pass around the drum the sludge being squeezed between the belts as it is conveyed around the drum by the belts.

3,743,101
SCREEN CHANGER
Ludwig Schmidt, 109 W. Muskegon Avenue, Whitehall, Mich.
Filed Apr. 18, 1972, Ser. No. 245,228
Int. Cl. B01d *35/00*
U.S. Cl. 210—447 **8 Claims**



A pair of removable strainers are mounted in a slide movable to position either strainer in the flow passageway of an extruder. The slide is locked into position by a spherical bulb rotatable in a seating cup and a wedge block intermediate the slide and bulb. The seating cup, bulb and wedge block all include openings alignable with the passageway. Movement of the wedge block to release the wedge engagement between the slide and bulb permits rapid movement of the slide from one position to the other to permit changing of the strainers during continuous operation of the extruder.

3,743,102
VORTEX SEPARATOR USING CORE PLATES
Arthur E. Mensing, East Hartford, and Richard C. Stoeffler, Tolland, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 17, 1971, Ser. No. 125,154
Int. Cl. B61d *21/26*
U.S. Cl. 210—512 **5 Claims**

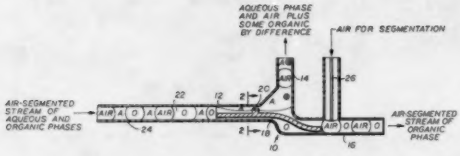


A vortex separator is used to separate oil from an oil-water mixture. The mixture is pumped into a cylindrical vortex tube at one end thereof at a high flow rate to impart a swirl to the flow in the tube. A small circular core plate is positioned directly within the oil exit aperture at the center of the opposite end of the tube to form a core of oil at the center of the tube.

3,743,103
PHASE SEPARATOR FOR CONTINUOUS FLOW OPERATION

Jack Isreeli, Mamaroneck; Aaron Kassel, Tarrytown, and Anthony F. Buccafuri, Pomona, all of N.Y., assignors to Technicon Instrument Corporation, Tarrytown, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,830
Int. Cl. B01d 12/00; G01n 29/02
U.S. Cl. 210—532 8 Claims

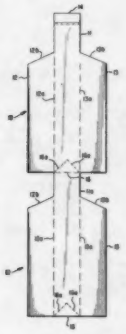

AQUEOUS PHASE AND AIR PLUS SOME ORGANIC BY DIFFERENCE
AIR FOR SEGMENTATION
AIR-SEGMENTED STREAM OF AQUEOUS AND ORGANIC PHASES
AIR-SEGMENTED STREAM OF ORGANIC PHASE

A separator for separating multiphase fluid streams. The separator includes inlet and outlet means having wettable means positioned within the inlet means to direct the fluid to the outlet means.

3,743,104
STORAGE AND DISPENSING RACK

John B. Peterson, Madison, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 8, 1971, Ser. No. 151,012
Int. Cl. A47f 7/00
U.S. Cl. 211—60 4 Claims



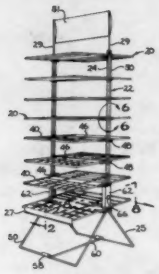
A rack for storing and retrieving articles which includes a compartment having a viewable area at the top thereof and through which the articles are removed therefrom. The rack is preferably formed of a one-piece blank of suitable rigid material and which is folded along certain predetermined lines.

3,743,105
MERCHANDISE DISPLAY APPARATUS

Melvin J. David, 16221 Quemada Road, Encino, Calif.

Filed Mar. 18, 1971, Ser. No. 125,771
Int. Cl. A47f 5/14
U.S. Cl. 211—153 4 Claims

A merchandise display apparatus having an upright structure supporting a plurality of shelves thereon and having a stand attachable to the upright structure at various positions. The upright structure has a pair of parallel, vertically disposed rods at each side of the structure, each of the rods being maintained in parallel separation by horizontal spacer members. Each of the shelves fits between the two sides of the upright structure and has a rod protruding over the side of the shelf and bent downward so as to be insertable between the pair of parallel rods on each side of the upright structure. Thus, the shelves are supported in vertical disposition by the horizontal spacers and maintained in a horizontal attitude by the engagement of the downward projecting rods on each side of the

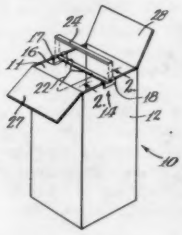


shelves with the parallel spaced apart rods on each side of the upright structure. A plastic extruded member for attachment to the shelves and for displaying merchandise information is also disclosed.

3,743,106
GARMENT HANGER DEVICE

Joseph A. Maziarka, and Robert J. Maziarka, both of c/o Reliing Corporation, 1837 W. Grand Avenue, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,767
Int. Cl. A47f 7/19; A47k 10/04
U.S. Cl. 211—123 11 Claims



A clothes hanger support for shipping containers including a horizontally extending cross bar having at each end U-shaped brackets that fit over the sides of the container with the cross bar projecting through the inner legs of each of the brackets, having a tab interengaged with the outer leg of each of the brackets and a tab interengaged with the inner leg of each of the brackets to provide a secure attachment between the cross member and the brackets.

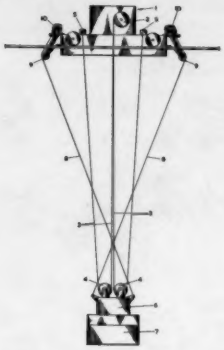
3,743,107
DEVICE FOR PREVENTING A BODY DEPENDING FROM ROPES FROM SWINGING

Jelis Verschoof, Voorhoutstraat 1, Haarlem, Netherlands

Filed Aug. 3, 1971, Ser. No. 168,539
Claims priority, application Netherlands, Aug. 4, 1970, 7011527
Int. Cl. B66c 19/00
U.S. Cl. 212—125 7 Claims

A device for preventing a rope suspended body from swinging which includes two ropes secured at a distance from each other to the body the swinging of which is to be prevented. A tensioning device is provided for each rope and the wire ropes are arranged at an angle to the vertical and to each other. The tensioning devices keep the respective ropes under tension with a force which is the same for each rope. These devices

are connected with each other such that when the tensions in the rope become unequal the tensioning device which is subjected to the comparatively higher load will exert a higher correcting pulling force.



3,743,108

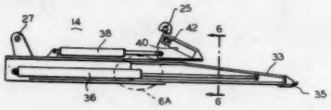
OUTRIGGER

Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 31, 1972, Ser. No. 221,967

Int. Cl. B60p *1/48*

U.S. Cl. 212—145 **7 Claims**



An outrigger comprising telescopic members, the outer telescopic member being pivotally connected adjacent one side of the vehicle which it is to stabilize and extending beneath the vehicle. The other end of the outer member is connected to the vehicle by means of a bracket which is movable longitudinally along the outer member. There is a track on the bracket at an angle with the axis of the outrigger, and a guide and support member is located on the vehicle and coacts with the track.

3,743,109

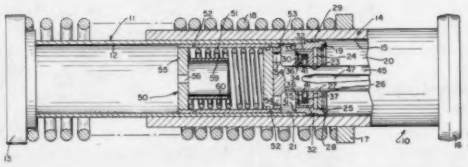
HYDRAULIC CUSHION DEVICE FOR RAILWAY VEHICLES

John W. Hutchison, Crown Point, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 3, 1972, Ser. No. 223,241

Int. Cl. B61g *9/16*

U.S. Cl. 213—43 **11 Claims**



A hydraulic cushion device includes a pair of cylinders having outer closed ends positioned together for reciprocating movement between extended and contracted positions. One of the cylinders includes a piston head having a metering orifice through which a metering pin positioned on the other cylinder is movable, whereby fluid from one side of the piston head is moved to the other side thereby providing fluid cushioning action. An accumulator casing is secured to one end of the metering pin and is relatively slidably disposed in one of the cylinders. The casing includes a floating piston normally retained by means of a spring in a closed position over openings in the casing to close the same. During cushioning action of the unit fluid passes through the openings of the casing to the interior thereof, moving the piston and fluid may be stored within the casing. The piston head includes a valve element cooperating with flutes on the metering pin for bypassing fluid through the piston.

3,743,110

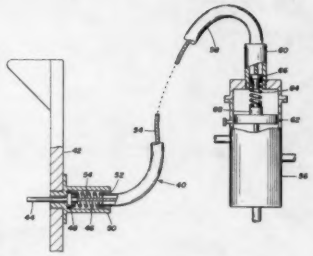
COUPLING VALVE ACTUATOR FOR AUTOMATIC PNEUMATIC COUPLING SYSTEM

Geoffrey Wilton Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 14, 1971, Ser. No. 162,377

Int. Cl. B61g *5/08*

U.S. Cl. 213—76 **6 Claims**



A coupling valve actuating mechanism for operating a pilot or interface valve in an automatic coupling system wherein the force required to open the valve upon the depression of a spring-projected plunger in a coupling operation is transmitted by either a hydraulic fluid or a flexible push-pull-type cable.

3,743,111

SYSTEM FOR DISCONNECTING ANY DESIRED CAR IN A TRAIN

Hiromitsu Shimada; Kenji Kawado, both of Kobe; Yutaka Nagoya, Ashiya; Toshio Toi, Amagasaki, and Shunichi Yamauchi, Kobe, all of Japan, assignors to Nippon Air Brake Company, Ltd., Fukiai-ku, Kobe, Japan

Filed Dec. 27, 1971, Ser. No. 211,871

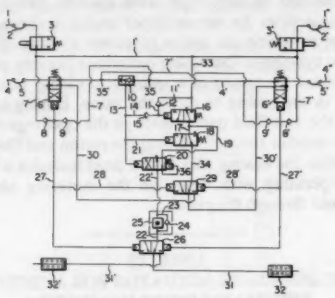
Claims priority, application Japan, Dec. 26, 1970, 45/125265

Int. Cl. B61g *1/08, 3/08, 5/06*

U.S. Cl. 213—212 **2 Claims**

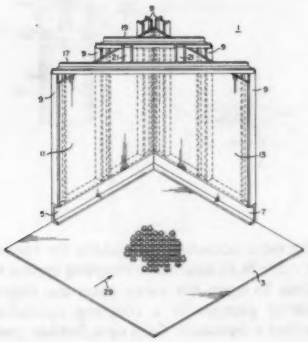
A system for disconnecting any desired car from a train of cars in which an actuating air supply line and an instruction air line are connected to a compressed air source in a locomotive to extend through the train. Air under low pressure is continuously supplied to the actuating air supply line extending through the cars, and the operator manipulates an on-off control valve in the locomotive by the number of times corresponding to the car number of the desired car to be disconnected. In response to the on-off manipulation, the instruction air conduits in the cars are successively charged with instruction air supplied from the instruction air line and are then exhausted until finally the instruction air conduit in the desired

car is charged with air. Then, air under high pressure is supplied through the actuating air supply line to air conduits in



the specific car to actuate a coupler unlocking means thereby releasing the coupler.

3,743,112
PALLET-LOAD STRAIGHTENER DEVICE
Robert H. Cooley, 1116 Macon Avenue, Pittsburgh, Pa.
Filed Feb. 22, 1971, Ser. No. 117,371
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 S 5 Claims

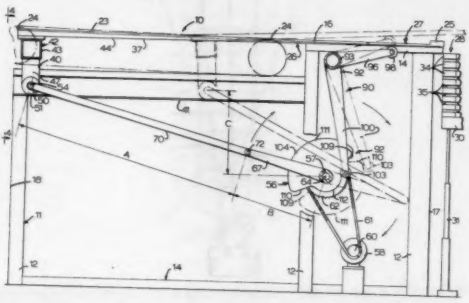


A pallet-load straightener device is provided, which includes a lower metallic apron or floor plate, upon which a fork-lift truck may ride up upon, and straighten disarranged cartons upon a unit-pallet load by moving the same against two rear adjoining straightener walls of the straightening device, so that no manual operations are required to reorganize the cartons. The lift truck may move in one direction against one straightener wall, drop the pallet load and withdraw the forks from the pallet, and then the fork-lift truck may move into the adjoining side of the pallet load to force the disarranged cartons upon the unit-pallet load against the adjoining straightener wall of the straightening device.

Bracing strips or channels are provided at the upper end of the device to facilitate movement of the straightener device into different locations at the receiving dock.

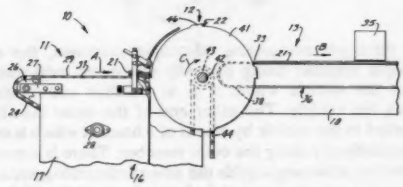
3,743,113
CARRIAGE DRIVE MEANS FOR LUMBER STACKER
George H. Eaton, 6649 Fremlin Street, Vancouver, British Columbia, and John A. Burton, 1115 Sutton Place, West Vancouver, British Columbia, both of Canada
Filed Jan. 3, 1972, Ser. No. 214,726
Int. Cl. B65g *57/10*
U.S. Cl. 214—6 DK 5 Claims

A lumber stacking apparatus is described having a reciprocating carriage with a forked arm assembly for picking up a course of boards at a course pickup station and carrying the course to a course stacking station. The carriage is provided with a crank drive mechanism for reciprocating the carriage. The crank drive mechanism has a crank shaft with a cam thereon that operates a bell crank to, (1) raise the forked



arm assembly at the course pickup station to pick up a course of boards; (2) maintain the forked arm assembly elevated during movement to the course stacking station, and (3) lower the forked arm assembly at the course stacking station in front of a stripping means.

3,743,114
GRID FEEDER
Ronald C. Van Linder, Watervliet, and Basil R. Van Linder, Kalamazoo, both of Mich., assignors to Winkel Machine Company, Inc., Kalamazoo, Mich.
Filed Mar. 18, 1971, Ser. No. 125,622
Int. Cl. B65g *59/00*; B65h *1/08*
U.S. Cl. 214—8.5 H 23 Claims



A grid feeder device for storage battery grids or plates comprises a pivotally oscillating bellcrank-like member and associated grid stop means and grid guiding means which, with pickup disks, are interposed between input and output conveyors. The input conveyor consists of a pair of continuously orbiting endless flexible conveying elements or chains upon which a plurality of grids are supported in substantially vertical orientation, the continuous movement of the conveying elements tending to maintain such grids closely packed together and for urging the leading or forward several of the grids onto a support edge of the oscillating member when the latter is in its lower and rearwardmost position and against an abutment thereon. The support edge of the oscillating member periodically moves forwardly and upwardly carrying the several grids therewith and moving the forwardmost one of the grids into the path of a tooth on the rotating pickup disk, which rotates in synchronism with the oscillating member. The grid stop means limit the forward movement of the forwardmost grid so that only that grid is picked up by the tooth on the rotating pickup disk. As the forwardmost grid is lifted from the support edge of the oscillating member by the rotating pickup disk, the grid guiding means urges same firmly against the surface of the pickup disk above the tooth thereon and the support edge of the oscillating member returns downwardly and rearwardly to its original position for receiv-

ing an additional grid or grids from the input conveyor to repeat the above mentioned cycle of operation. In the meantime, the rotating disk transfers the aforementioned forwardmost grid to the output conveyor, the speed of the output conveyor being adjusted with respect to the speed of the rotating disk and oscillating member so that grids will be placed on the output conveyor in a horizontal and close spaced condition to allow further operations to be carried out thereon, such as a grid pasting operation.

3,743,115

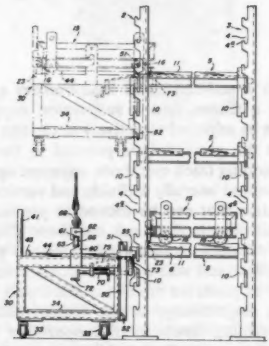
RACK STORAGE APPARATUS

Samuel Saul, Jr., Pittsburgh, and Thomas D. Colbridge, Chalkhill, both of Pa., assignors to Rack Engineering Company, Connellsville, Pa.

Filed Oct. 8, 1971, Ser. No. 187,608

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 A **8 Claims**



There is described a multi-shelf storage rack having spaced shelf-supporting uprights arranged in pairs, each pair comprising a front and a rear upright, the uprights having two rows of vertical notches extending vertically thereof in which the shelves are supported. At least some of the shelves have a pair of transverse rails extending from the front to back with a stop at the back. A wheeled dolly is positioned on these rails and the dolly has a spring-biased latch pin that restrains it against movement on the rails. An outrigger, comprising a structural frame, can be hung on the uprights in position in front of a selected shelf, secured against accidental removal whereupon a latch pin-releasing device on the outrigger may be operated to release the latch pin on the dolly and the forward end of the dolly rolled from the rails on the shelf onto matching rails on the outrigger to a position where the dolly is exposed vertically for loading or unloading by a crane or hoist. When loading or unloading is completed, the dolly is rolled back onto the shelf and an inclined ramp on the outrigger retracts the latch pin on the dolly until the dolly is back on the shelf when the latch pin will spring into latching position. The outrigger is thereafter lifted off the rack by the crane or hoist and placed on the floor or hung in front of another shelf.

3,743,116

CENTRAL CONVEYING SYSTEM

Horst Giessler, Rheinfelden, Switzerland; Klaus Lorenz; Gerhard Brutschin, both of Wyhlen, Germany, and Marc Walti, Lucerne, Switzerland, assignors to Firma Rene Blaser, Hebe-Und Maschinenbau Und Firma Translift Gesellschaft fur Hebe-Und Forderanlagen mbH, Wyhlen/Baden, Germany

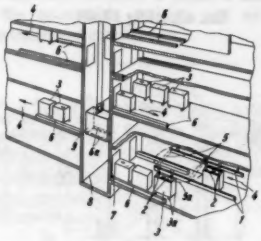
Filed Jan. 7, 1972, Ser. No. 216,197

Claims priority, application Germany, Jan. 9, 1971, P 21 00 842.4

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 R **9 Claims**

A system with loading and unloading stations particularly useful for supplying hospitals, laundries, large kitchens, warehouses and the like, having movable carts capable of receiving containers to transport various supplies. The carts are transported either vertically or horizontally depending upon the building structure. Loading and unloading stations have suspension systems for the cars for loading and unloading goods of different types. Elevator cabins are provided having



guide rails which are flush with additional guide rails on the floor of each cabin and each landing for moving the carts in and out of the elevator cabins. Lifting and lowering means are provided at places which the movable carts are transferred from the suspension system to the conveyor system on the floor.

3,743,117

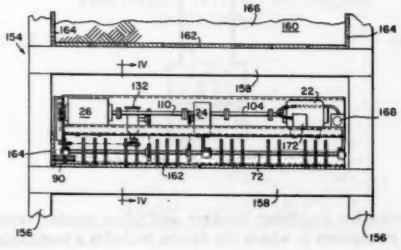
APPARATUS FOR REMOVING COMPOST FROM MUSHROOM TRAYS

Guido Frezzo, Avondale, and Thomas J. Placentino, Kennett Square, both of Pa., assignors to Longwood Development Corp., Kennett Square, Pa.

Filed July 8, 1971, Ser. No. 160,768

Int. Cl. B65g 65/46

U.S. Cl. 214—17 DA **6 Claims**



A non-dirigible frame of a width for extending across a mushroom tray is supported on the casing of a screw conveyor extending across the front of the frame and on a series of discs mounted upon a shaft extending across the rear of the frame. An electric motor and change speed means carried by the frame are operable for actuating the shaft and the discs mounted thereon, and for thereby advancing the machine. As the machine advances, the casing scrapes along the bottom of the tray. The electric motor and change speed means are also operable for actuating the screw, as a consequence of which the compost scraped up from the bottom of the tray and scooped into the casing is conveyed by the screw to one side of the tray for discharge therefrom.

3,743,118

STACKING DEVICE FOR REGULARLY SHAPED, FLAT ARTICLES, FOR EXAMPLES BISCUITS OR COOKIES

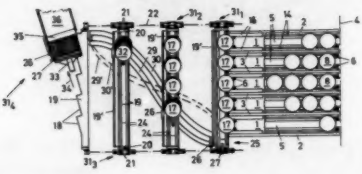
Rene Fluck, Neuhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rhinefall, Switzerland

Filed July 29, 1971, Ser. No. 167,403

Claims priority, application Switzerland, Aug. 3, 1970, 11672/70

Int. Cl. B65g 57/00

U.S. Cl. 214—7 8 Claims



A stacking device for uniformly shaped, flat articles, such as biscuits, is provided with a plurality of horizontal and parallel arranged channels, each of which is supplied with a group of articles to be stacked. Each channel is provided with means to combine the articles in the same to form a longitudinal stack. At least one transverse stacking unit is provided which stacks the longitudinal stacks to form a transverse stack.

3,743,119

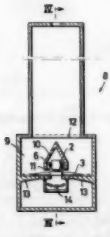
DEVICE FOR CLEARING FLUENT MATERIAL FROM BUNKER TYPE STORAGE CONTAINERS

Fritz Teske; Lothar Teske, both of Porz-Westhoven, and Robert Dreismann, Cologne-Niehl, all of Germany, assignors to Maschinenbau Louise GmbH, Porz-Westhoven, Germany

Filed Oct. 28, 1970, Ser. No. 84,573

Int. Cl. B65g 65/48

U.S. Cl. 214—17 DA 8 Claims



A device for emptying bunkers and other similar vertical storage containers in which the device includes a horizontally elongated rectangular housing which provides a support for drive wheels to move the device and which also mounts a horizontal clearing wheel for rotation. The device is mounted for horizontal movement in a chamber at the lower end of the bunker. The clearing wheel has a diameter greater than the width of a roof shaped cover within which the carriage is mounted for horizontal movement. This arrangement allows the blade to be engaged by fluent material in the bunker on both sides of the cover. The blade rotates in a plane adjacent horizontal support surfaces at each side of the cover so the fluent material is loosened and moved to fall through a slot onto a conveyor. By virtue of this straight through arrangement, jamming and clogging of the fluent material is avoided, and by virtue of the block shaped or rectangular housing, the manufacturing cost of the device is substantially reduced.

3,743,120

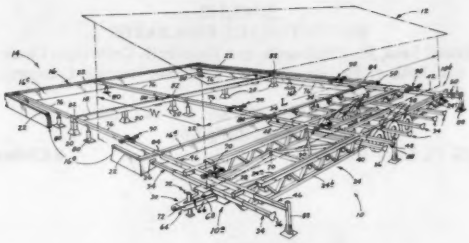
VEHICLE WITH SELF-CONTAINED LOAD TRANSFER SYSTEM

Kenneth J. Schmidt, Thurston, Oreg., assignor to General Trailer Company, Inc., Springfield, Oreg.

Filed Aug. 4, 1971, Ser. No. 168,980

Int. Cl. B65g 67/24

U.S. Cl. 214—38 BA 4 Claims



A trailer with a self-contained load-transfer system. The trailer includes a frame, and a suspension supporting the frame which can be adjusted selectively to change the frame's elevation above the ground. Incorporated in the frame are transversely extending track members, adjacent opposite ends of which are mounted laterally shiftable and vertically swingable track extenders that can be moved to positions forming longitudinal extensions to the track members. The extenders are adapted for connection (when extended) to supports external to the trailer, and when so connected swing between raised and lowered positions relative to the frame with lowering and raising, respectively, of the frame relative to the ground. Such swinging functions in cooperation with track-riding carriages that can be detachably connected to the base of a load to accommodate picking up and depositing of a load on the frame. The carriages, track members and extenders facilitate lateral shifting of a load relative to the frame.

3,743,121

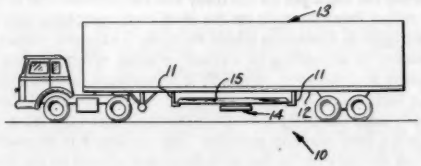
UNLOADING CHUTE ASSEMBLY AND MEANS DETACHABLY CARRYING SAME ON A VEHICLE

John F. Langer, 908 1st Avenue, Northwest, Fairbault, Minn.

Filed Apr. 14, 1971, Ser. No. 133,963

Int. Cl. B65g 67/24

U.S. Cl. 214—44 R 1 Claim



An adjustable and portable hydraulic chute. This device is carried by a trailer being towed by a tractor.

The device includes fold-down wheels with hydraulic cylinders for operating the wheels and adjusting the angle of the chute portion of the device.

3,743,122

LAUNDRY SLING BAG AND CART THEREFOR

Charles J. Fortriede, Highland Heights, Ky., assignor to McGraw-Edison Company, Elgin, Ill.

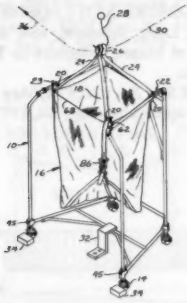
Filed July 26, 1971, Ser. No. 165,989

Int. Cl. B65g 67/24

U.S. Cl. 214—44 R 7 Claims

A laundry sling bag and roll about cart therefor, the cart having a front and top open frame with upstanding tabs for

holding the bag therein in a top open position for easy loading and for permitting vertically forward power liftoff of the loaded bag from the cart, the bag having two straps to receive the power liftoff conveyor and a cart retaining device being employed to hold the cart down during the power liftoff, the bag being tapered from a large top opening to a smaller but contoured bottom opening and having adjacent bottom flaps formed from one bag half to close the open bottom and overlap with a relieved opposite bag half, whereupon quick release of the flaps is effective to dump the articles of laundry therein without binding or jamming and into a small loading opening



in an underlying washer.

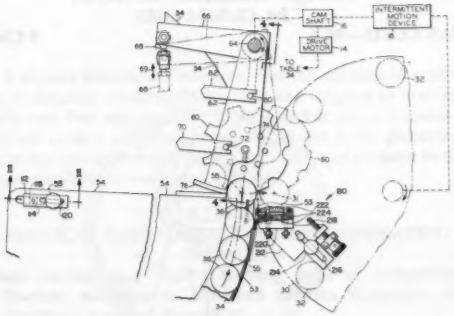
In industrial or institutional laundries, it is common to segregate the dirty or soiled articles or goods in sling bags according to the specific types of article or color. For example, different type hospital goods might include uniforms, operating garments, patient garments, bed sheets, etc., where all like goods would be sorted into separate sling bags each of sufficient size to hold maybe 100 pounds of goods. The bags with like goods then can be accumulated and as required dumped into large industrial washers of maybe 400 pound capacity for laundering. By having all like type goods together, the proper washing temperature or washing solution can be used.

3,743,123

FEED MECHANISM FOR TURRET TYPE ARTICLE INSPECTION MACHINE

Charles M. Kinsbury, Manchester, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 26, 1972, Ser. No. 220,837
Int. Cl. B65g *59/00*
U.S. Cl. 214—89 **15 Claims**



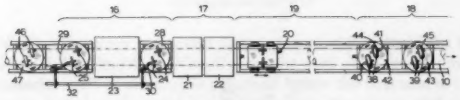
A horizontally oriented rotary table is provided with clusters of upright articles to be inspected in article chucking devices located in an intermittently operated turret. An improved mechanism is disclosed for feeding the articles off the table and onto a lifting device for insertion in one of the chucking devices and for receiving the articles discharged from these chucking devices to feed the acceptable articles from the turret. The infeed mechanism includes a pocket wheel capable of accommodating articles of various size, and the wheel is mounted on an arm, or lever, for movement of the pocket wheel between an article receiving position over the table and a load position over the lifting device. The article outfeed mechanism includes a positive indexing device for receiving the acceptable articles and advancing them in upright condition to a storage box.

3,743,124

APPARATUS FOR CONVEYING PIPE LONGITUDINALLY

Harold F. Jarvis, Moffat, Ontario, Canada, assignor to Shaw Pipe Industries Ltd., Rexdale, Ontario, Canada

Filed Dec. 20, 1971, Ser. No. 209,574
Int. Cl. B65h *51/00*
U.S. Cl. 214—338 **13 Claims**



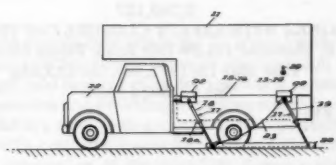
In a process in which pipe sections are advanced longitudinally through a treatment zone while being rotated about a longitudinal axis, the pipe sections are supported as they emerge from the treatment zone in a manner which does not damage their treated surfaces. The pipe sections are coupled together by coupling members which provide rigid circumferential support surfaces between adjacent pipe section ends. A shuttle carriage, which can reciprocate between first and second limit positions, has a support assembly which can be raised and lowered into and out of supporting engagement with each successive coupling member to support the coupled ends of a pair of pipe sections over a predetermined distance upon leaving the treatment zone.

3,743,125

CAMPER BODY LIFT AND SUPPORT

Paul J. Ashley, Jr., Pico Rivera, Calif., assignor to Bradshaw Incorporated, Montebello, Calif.

Filed May 21, 1971, Ser. No. 145,704
Int. Cl. B60p *1/54*
U.S. Cl. 214—515 **16 Claims**



A camper body of the type adapted to be carried in a "pick-up" truck is provided with a pair of pivoted legs on each side. The lower ends of the legs on either side are pivoted to a longitudinal ground support member such as a channel member in the provision of a shoe. These ground support members or shoes provide a degree of stability which is not afforded by conventional jacks and make it possible to separate the camper body from the pick-up truck by simply moving the truck in reverse. A diagonal cable arrests the movements of the legs to positions of clearance between the camper body and the truck. To reload the camper body on the truck the truck is simply moved under the camper body and the two are coupled, such as by means of a cable, whereupon the truck is moved forwardly thereby reversing the process. When the

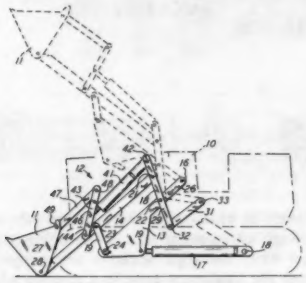
camper body is resting on its ground support members removable lateral braces are also provided between the camper body of each ground support member to provide increased stability. Further increased stability is provided by a lateral cable which connecs the two ground support members or shoes and these ground support members are provided with tread means for anti-slip purposes.

3,743,126

LOADER BUCKET CONTROL LINKAGE

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 28, 1972, Ser. No. 221,624
Int. Cl. E02f 3/00
U.S. Cl. 214—776 **10 Claims**



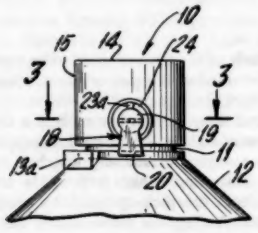
A control linkage for articularly mounting a loader bucket on a supporting vehicle. The linkage includes a main boom and a secondary boom, with the main boom pivotally mounted on the vehicle and with links connecting the secondary boom to the main boom and with the bucket pivotally mounted on the secondary boom. A hydraulic cylinder is mounted on the vehicle and is connected to the main boom for raising and lowering the bucket, and another hydraulic cylinder is connected with the bucket for tipping the bucket. The linkage and boom pivot mounting are arranged so that the bucket can be raised in a flatened curve and so that the bucket is in an optimum forward position when raised, and the operator has maximum visability of the bucket. That is, the boom is pivoted on the vehicle at a point lower than that required for achieving the raised forward position of the bucket, and thus the operator has improved visability of the bucket.

3,743,127

CONTAINER WITH SAFETY CLOSURE CAP THEREFOR

Marcel E. Morceau, 111-39-76th Road, Forest Hills, N.Y.

Filed May 15, 1972, Ser. No. 253,456
Int. Cl. B65d 55/02
U.S. Cl. 215—9 **18 Claims**



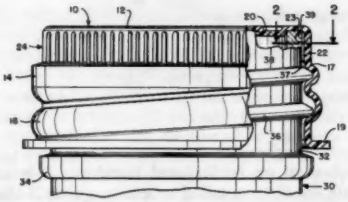
A safety closure for a container is provided with pivoted locking means rotatably mounted in and passing through the side wall of the closure to contact the neck of the container and having means slide through the neck threads in screwing on the closure. In fully tightening the closure on the neck, a portion of the locking means contacts abutment means on the neck of the container causing rotation of the locking means to fully locking position. After the closure is screwed on, in an attempted returning removal of the closure, an inward contacting portion of the locking means is placed in a position transverse of the neck threads, thereby preventing closure removal. The safety closure is thusly secured against opening by young children.

3,743,128

CLOSURE AND CLOSURE DIE

Edmund Childs, Long Meadow, and Raymond Ostrowski, Danvers, both of Mass., assignors to The KLM Company, Stratford, Conn.

Continuation of Ser. No. 826,973, May 22, 1969, Pat. No. 3,606,063. This application July 28, 1971, Ser. No. 166,763
Int. Cl. B65d 41/04
U.S. Cl. 215—43 **5 Claims**



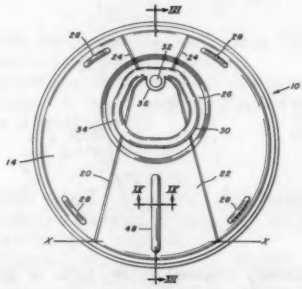
A thermoformed screw type closure of semi-rigid material having a plurality of projections located between the uppermost point of the thread and the top of the closure which is recessed to lie inwardly of the root of the thread to engage the neck of a container onto which the closure is to be applied. The projections deform upon screwing down of the closure onto the container producing a good seal and fit and preventing the closure from backing off. A die is also disclosed for making closures of the foregoing type which utilizes the recessed portions of the closure as an aid in removing the closure from the die.

3,743,129

TEAR-OFF CLOSURE WITH REINFORCING RIB

Wilburn C. Willis, Richmond, Ind., and Robert L. LaBarge, Ben Avon, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 5, 1971, Ser. No. 121,467
Int. Cl. B65d 43/02
U.S. Cl. 215—46 A **9 Claims**



A tear-off closure is provided which has a top end wall and a depending skirt and having a tear strip defined by scoring divi-

sive of the end wall and into the skirt, the tear strip having at least one embossed rib therein which extends from a location toward the center of the closure radially outward to a location adjacent the shoulder of the closure between its end wall and the skirt to ensure severance of the tear strip over such shoulder of the closure. The closure may further have a raised rim around a recessed central panel in its top end wall, with the rib in the tear strip extending from the recessed central panel into the rim of the closure.

3,743,130

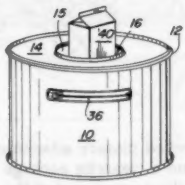
DISPOSABLE AND COLLAPSIBLE PLASTIC COOLER

Blanche I. Jorgensen, 1818 W. Norwood Avenue, Chicago, Ill.

Filed Apr. 23, 1971, Ser. No. 136,712

Int. Cl. B65d *25/18*

U.S. Cl. 220—9 R **3 Claims**



A disposable bedside cooler made of heat-sealed plastic which is collapsible for convenient storage having a dry inner cylindrical cavity for insertion of the object to be cooled and maintained dry therein surrounded by a watertight annular coolant chamber having a slide fastener in its outer cylindrical side wall adjacent the top of the cooler zip opening for the insertion of ice therein and zip closing for the nonspill of the ice and melt therefrom in the event of an accidental upset of the cooler.

3,743,131

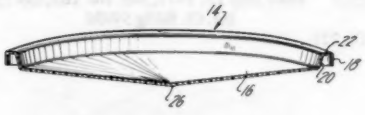
CLOSURE FOR OPEN-MOUTHED CONTAINERS OR TUBULAR VESSELS

Jack V. Croyle, Woonsocket, and James B. Swett, Barrington, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 48,405

Int. Cl. B65d *39/12*

U.S. Cl. 220—24.5 **3 Claims**



A closure suitable for insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a conical central wall that peculiarly adapts it for placement upon the tubular member by the application of pressure to the approximate center of the central wall.

3,743,132

VERTICAL TUBE FURNACE FOR HIGH OPERATING PRESSURE

Hans Larker, and Mats Lindberg, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

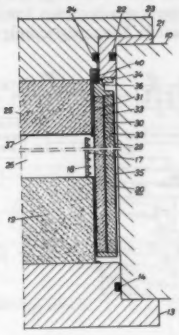
Filed Feb. 22, 1972, Ser. No. 228,015

Claims priority, application Sweden, Mar. 12, 1973, 3170/71

Int. Cl. F27b *3/02*

U.S. Cl. 220—40 R **3 Claims**

A vertical furnace for isostatic hot-pressing of powder bodies includes a cylindrical pressure chamber formed of a high pressure cylinder and end closures projecting into the cylinder. Insulation arranged in the chamber includes a cylindrical insulating wall and end insulation members. There is a seal between the upper end closure and the high pressure



cylinder. In order to protect this seal against heat from the inside of the chamber, a heat resistant seal of a semi-porous material such as asbestos is arranged below the first seal in the space between the pressure cylinder and the upper end closure projecting into the cylinder.

3,743,133

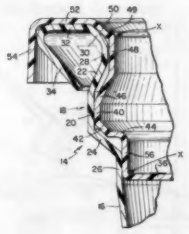
LID AND CONTAINER

Willard J. Rathbun, Castalia, Ohio, assignor to Foster Grant Co. Inc., Leominster, Mass.

Continuation of Ser. No. 875,157, Nov. 10, 1969. This application Jan. 10, 1972, Ser. No. 216,841

Int. Cl. B65d *43/10, 21/00*

U.S. Cl. 220—60 R **5 Claims**



A lid and container to which the lid is removably attached; the lid and container each having a configuration which insures a tight seal between them for protecting perishables, the lid configuration also providing a stacking means for maintaining each lid in a stack in its properly aligned position for strip-feeding and a centering means for locating and guiding the lid over the rim portion of the container during a strip-feeding and capping operation.

3,743,134

ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT

Geoffrey E. P. Constable, and Dennis Arthur Lloyd, both of Cheltenham, England, assignors to Smiths Industries Limited, London, England

Filed Dec. 3, 1970, Ser. No. 94,698

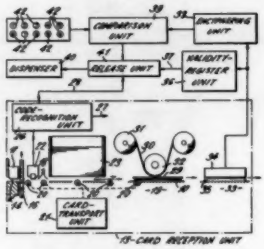
Claims priority, application Great Britain, Dec. 3, 1969, 59,090/69

Int. Cl. G06k *5/00*

U.S. Cl. 221—2 **27 Claims**

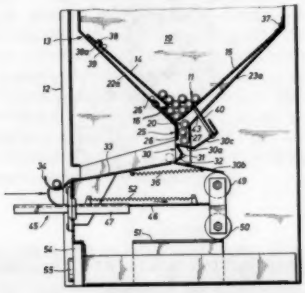
A money-dispensing system is operative to dispense money in response to a bank customer's credit card and keyed-entry

of his personal-identification number, only if this number accords with the customers's account number on the card and substantial equality of above-threshold magnitude is detected to exist between magnetic recordings read from two parallel tracks on the card. The recordings are read by two magnetic heads that have their sensing gaps (each possibly of stepped form) obliquely set in V-shaped configuration to the tracks,



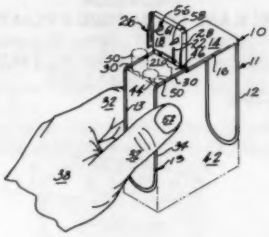
and are phase modulated in accordance with the rate of permissible use of the card. Dispensing is enabled only if this would be within the permissible rate, and the rate-of-use data on the card is up-dated by recording from the two heads. Data relating to the extent of permissible use of the card may also be read from the two tracks by a pair of read-only heads with obliquely set gaps, and then up-dated by erasure using a conventional straight gap.

3,743,135
DISPENSER
Charles E. Brumley, 2015 Saxon, Houston, Tex.
Filed Dec. 21, 1970, Ser. No. 100,027
Int. Cl. G07f *11/44*
U.S. Cl. 221—205 **9 Claims**



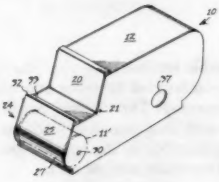
Apparatus is disclosed for dispensing a preselected number of generally cylindrical articles of substantially uniform length and diameter. The apparatus includes a hopper having two facing vertical walls and two facing walls that converge downwardly. The lower edges of the walls form an opening at the bottom of the hopper such that only one article at a time can pass through the opening. The articles, which may be cylindrical cardboard tubes containing pens or pencils, are stacked side by side in the hopper with their longitudinal axes perpendicular to the facing vertical walls. A dispensing means is mounted on the bottom of the hopper for receiving and dispensing a preselected number of the articles. The converging walls of the hopper are movable and at least one of the walls is moved inwardly of the hopper each time the dispensing means is actuated to rearrange the articles and break up any bridge formed by two or more articles wedging between the converging walls above the opening so that the flow of articles through the opening to the dispensing means is uninterrupted.

3,743,136
SELECTIVE CLOSURE FOR ATTACHMENT TO CIGARETTE CONTAINERS AND THE LIKE
Constantine P. Chambers, 4300 Chamblee Tucker Road, Atlanta, Ga.
Substitute for Ser. No. 609,024, Jan. 13, 1967. This application Nov. 26, 1971, Ser. No. 202,235
Int. Cl. A24f *15/14*; B65d *85/10*
U.S. Cl. 221—213 **9 Claims**



A spring-controlled closure attachment with a small wire frame inserted into a cigarette package to close the opening made when the folded upper part of the package is torn away to expose the cigarettes and includes a finger-manipulated latch operated by squeezing the wire frame to release the spring operated closure. On the frame is mounted a cover made from lightweight plastic or the like which has a small, spring operated lid normally latched in place by means of a latch member and which is latched over one side of the small wire frame member and is operated by finger-manipulation by squeezing the frame to cause the lid to flip open to expose the cigarettes for removal and thereafter the lid is readily snapped back into place by hand. The lid may be made to open either longitudinally or transversely of the package and also may include a small barb-like projection which engages the packed tobacco in the end of the cigarette to lift the cigarette a small amount from the opening as the spring operated lid flips open thereby making it easier to grasp the cigarette between the fingers without damaging the end.

3,743,137
ROLLABLE ARTICLE DISPENSER
Charles Gale Bennett, Robinson Road, Old Hickory, Tenn.
Filed July 13, 1971, Ser. No. 162,189
Int. Cl. B65g *59/00*
U.S. Cl. 221—289 **6 Claims**



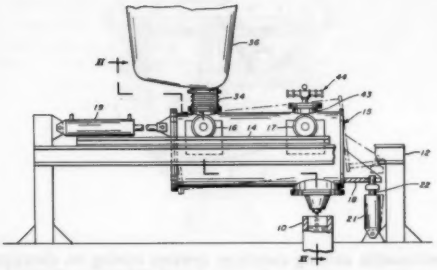
A dispensing device primarily for rollable articles, such as cans or bottles, including an inclined runway for supporting the articles in series for gravitational movement toward a discharge end. A door for opening and closing the discharge end having a front barrier and a bottom barrier merged to form a transversely disposed, arcuate trough. When the door is in closed position, the trough receives the leading article, and when the door is in open position, the bottom barrier member moves between the leading article and the next adjacent article to permit removal of the leading article and to stop movement of the remaining articles on the runway.

3,743,138

METHOD OF FEEDING CONTINUOUS-CASTING MACHINES USING CONTROLLED GAS PRESSURE HEAD

Richard E. Lyman, Rich Township, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,402
Int. Cl. B22d 37/00
U.S. Cl. 222—1 2 Claims



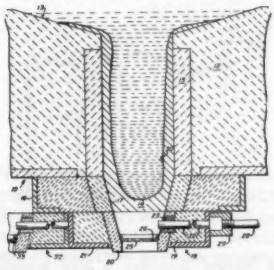
A tundish formed as a fully enclosed refractory-lined vessel for feeding molten metal to a continuous-casting machine. The vessel is mounted to tilt and has a nozzle in the bottom and the top is connected to a ladle by a pressure-tight bellows. The vessel is pressurized through a dynamic pressure regulator which controls the effective head at the nozzle.

3,743,139

METHOD AND APPARATUS FOR INITIATING POURING FROM A BLOCKED OPENING OF A BOTTOM POUR VESSEL

Richard E. Lyman, Rich Township, Cook County, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 169,954
Int. Cl. B22d 37/00
U.S. Cl. 222—1 8 Claims



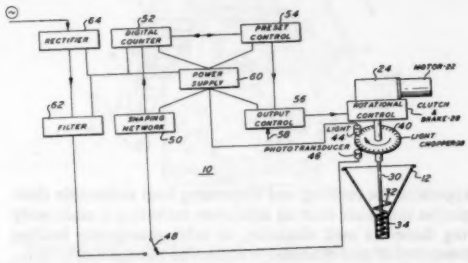
An improved refractory closure member having a chamber formed by a removable disc in the normal nozzle opening, into which chamber a reactive gas such as oxygen is introduced to initiate a stream of molten metal from a bottom-pour vessel.

3,743,140

FILLER APPARATUS WITH HOPPER AND ROTARY FEED MECHANISM FOR DISPENSING CONTROLLED VOLUMES OF MATERIALS

Charles A. Sauerbrey, Malverne, Pa., assignor to G. Diehl Mateer Co., Wayne, Pa.

Filed Dec. 21, 1970, Ser. No. 99,789
Int. Cl. B67d 5/14
U.S. Cl. 222—63 4 Claims



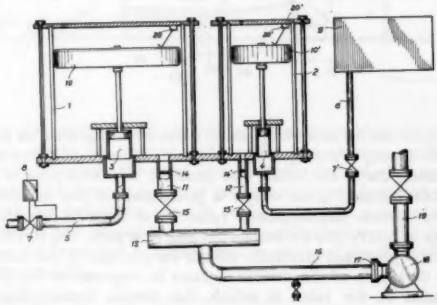
Apparatus for dispensing controlled volumes of materials from a hopper using a rotary feed mechanism incorporates a digital count controller responsive to a signal generator that generates digital signals in direct relation to the rotary displacement of the feed mechanism.

3,743,141

MIXING APPARATUS FOR LIQUIDS

Reinhold Mnilk, Dortmund-Wickede; Manfred Keil, Dortmund, and Karl-Heinz Finger, Dortmund-Oespel, all of Germany, assignors to Holstein & Kappert Maschinenfabrik "Phonix" GMBH, Dortmund, Germany

Filed May 14, 1971, Ser. No. 97,410
Claims priority, application Germany, Nov. 15, 1970, P 19 57 501.0
Int. Cl. B67d 5/08
U.S. Cl. 222—67 9 Claims



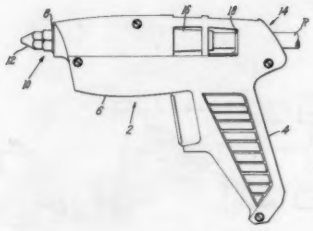
Two or more vessels are provided each having therein a different liquid components which is to be admixed with the liquid components in the other vessels. A pump is located at a level lower than the vessels and a mixing chamber is located between the vessels and the pump. Conduits connect the mixing chamber with the respective vessels and a single conduit connects the mixing chamber with the suction side of the pump. Throttling means is provided in each of the conduits connecting the vessels with the mixing chamber.

3,743,142

ADHESIVE EXTRUDERS

Richard M. Elliott, and Albert E. Newton, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed Oct. 8, 1971, Ser. No. 187,781
Int. Cl. B67d 5/62
U.S. Cl. 222—146 HE 6 Claims



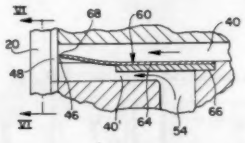
Apparatus for melting and dispensing heat softenable thermoplastic materials such as adhesives including a main body having therein a melt chamber, an inlet passageway leading into one end of said chamber, a discharge passageway in communication with the other end of said chamber, the melt chamber having an initial melting section with a generally round or circular cross section and a melt acceleration section wherein the side walls defining said chamber shift progressively from the round perimeter of said initial section to the subsequent section with a cross section which defines a generally undulating perimeter, means for heating the main body and means for feeding the thermoplastic material through the inlet passageway and melt chamber.

3,743,143

APPARATUS FOR EXTRUDING PLASTIC MATERIAL

John J. Barney, and James L. Flanagan, both of Chippewa Falls, Wis., assignors to Leesona Corporation, Warwick, R.I.

Filed Sept. 10, 1971, Ser. No. 179,319
Int. Cl. B29c 21/00
U.S. Cl. 222—145 9 Claims



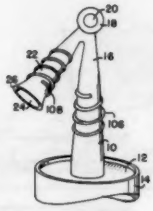
Apparatus for extruding plastic material comprising an extruder having a passaged junction box disposed adjacent an extrusion die is disclosed. The junction box incorporates a flexible junction plate which is positioned at the junction where diverse thermoplastic resinous streams of material merge or marry into a common laminar flow path. The flexible junction plate automatically adjusts its position in the common flow path of the diverse streams in response to the differential in the rates at which the diverse thermoplastic materials are fed through the common flow path to the extrusion die. By virtue thereof the junction where the diverse materials marry preliminary to coextrusion to form a composite sheet or laminate is smooth and linear. This promotes uniformity of relative thickness of the individual layers or laminae throughout the composite sheet. Moreover, since the adjustment of the junction plate is automatic as a function of the rate at which the several thermoplastic materials are delivered into the common flow path, there is no need to disassemble the extrusion apparatus to reset the junction plate when the rate at which the respective diverse thermoplastic streams are altered.

3,743,144

RECLOSEABLE CALKING CARTRIDGE NOZZLES

Donald B. Marg, Mary Kay Lane, Glenview, Ill., and Charles M. Marg, 15 Greenhill Lane, Philadelphia, Pa.

Filed June 18, 1971, Ser. No. 152,971
Int. Cl. B67d 5/06
U.S. Cl. 222—180 6 Claims



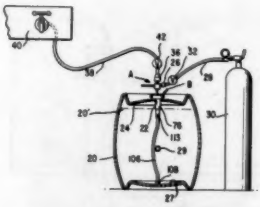
Recloseable calking cartridge nozzles having an elongate, sealed thermoplastic spout and an associated closure attached to the spout. After the spout has been cut to allow a portion of the calking material contained within the cartridge to exit through the spout, the associated closure overfits the spout to reseal the cartridge until further use is desired. The nozzle and closure integrally connect to form a hanger for store display and home storage purposes.

3,743,145

TAPPING DEVICE FOR BEER KEGS AND THE LIKE

Mack S. Johnston, Rolling Hills, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Division of Ser. No. 773,387, Nov. 5, 1968, Pat. No. 3,591,058, which is a division of Ser. No. 587,627, Oct. 18, 1966, Pat. No. 3,422,448, which is a continuation of Ser. No. 406,682, Oct. 27, 1964, abandoned, which is a continuation-in-part of Ser. Nos. 150,982, Nov. 8, 1961, abandoned, and Ser. No. 395,084, Sept. 8, 1964, Pat. No. 3,231,154, said Ser. No. 150,982, is a continuation-in-part of Ser. No. 25,592, April 29, 1960, abandoned, which is a continuation of Ser. No. 159,818, Dec. 8, 1961, Pat. No. 3,156,252. This application Feb. 8, 1971, Ser. No. 113,570
Int. Cl. B65d 83/14
U.S. Cl. 222—400.7 19 Claims



The tapping device includes a keg adapter semi-permanently secured within a keg opening and having liquid and gas passages. The keg adapter is secured by an externally threaded ring which locks under the keg flange by cooperation with a collar which locks the keg adapter flange to the keg flange. A coupler having segregated liquid and gas passages and an internally threaded collar is attached to the keg adapter when the keg is tapped with the collar being threadedly secured to the ring.

3,743,146

DOSING VALVE

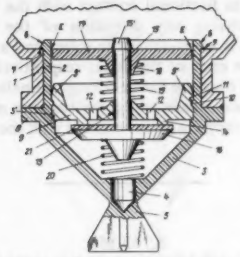
Claude Schindler, Geneva, Switzerland, assignor to ZYMA S.A., Nyon, Switzerland

Filed Jan. 18, 1971, Ser. No. 107,243

Claims priority, application Switzerland, Jan. 21, 1970, 822/70

Int. Cl. G01f 11/28

U.S. Cl. 222—446 4 Claims



A dosing valve for liquid product comprises a valve body open in the upper part to receive product and having an outlet orifice at the lower part. An upper disc is displacable above a pierced separating member in a cylindrical housing in the body, the disc being smaller than the housing to leave a gap for the passage of product. The upper disc is displacable, against the action of a spring, from an upper position in which it allows passage of a dose of product towards a lower position in which it stops the passage of product. A lower disc, for controlling the passage of doses of product through the separating member to the outlet orifice, is normally applied against the lower face of the separating member by the difference in the atmospheric pressure acting downstream of the lower disc and a depression created upstream of the lower disc when the upper disc moves from the lower position to the upper position.

3,743,147

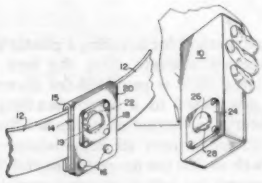
SUPPORT FOR CARRYING CASE

Mieczyslaw Wilczynski, Westchester, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 10, 1970, Ser. No. 96,693

Int. Cl. A45c 11/00

U.S. Cl. 224—26 R 5 Claims



A support for a carrying case for apparatus to be carried by a person supports the case on a belt, or the like, and permits the same to pivot with respect to the belt and to be easily and quickly connected thereto and detached therefrom. This support can be used for apparatus such as a personal radio paging receiver, or any other device which is to be carried by a person. The support includes a receptacle secured to the belt having a nonsymmetrical opening therein. The carrying case has a plate thereon with a button projecting therefrom having the same shape as the opening in the receptacle. The button can be inserted into the opening when the carrying case is in a position it will not assume during normal use, and will be retained when pivoted to other positions which it may assume during use.

3,743,148

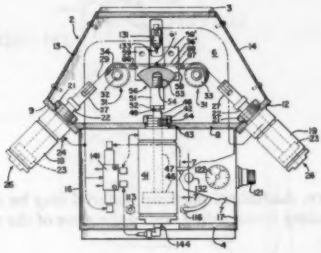
WAFER BREAKER

Heinz F. Carlson, 200 Kenny Court, Santa Cruz, Calif.

Filed Mar. 8, 1971, Ser. No. 121,886

Int. Cl. B26f 3/00

U.S. Cl. 225—2 25 Claims



Presented is a machine for breaking a semiconductor wafer that has been scribed into the individual dies described by the scribe lines.

3,743,149

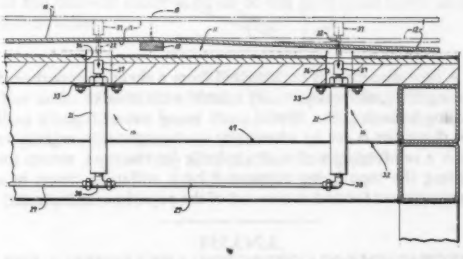
GLASS CUTTING TABLE

Arthur D. Groppe, 1627 Starlite Drive, Milpitas, Calif.

Filed Apr. 20, 1972, Ser. No. 245,988

Int. Cl. B26f 3/00

U.S. Cl. 225—2 8 Claims



A glass cutting table provides a supporting surface for large glass sheets for scoring and cutting into smaller sections; means for raising the sheet from the table surface while maintaining the sheet in coplanar position to permit insertion of a break bar below the sheet in registration with a scored line thereon; such means functioning thereafter to lower the sheet onto the break bar to cause clean breaking of the sheet along the scored line.

3,743,150

METHOD OF AND APPARATUS FOR PREPARING WINDOWS AND THE LIKE FOR SPRAY PAINTING

Albert Edmund Eckart, Jr., Westport, Conn., assignor to Sapolin Paints, Inc., New York, N.Y.

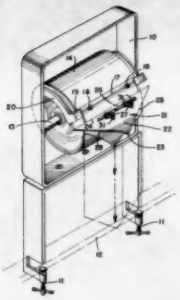
Filed Dec. 10, 1971, Ser. No. 206,722

Int. Cl. B26f 3/02

U.S. Cl. 225—9 5 Claims

In preparing standard house window trim for spray painting, strips of adhesive-coated masking paper are formed by the use of a miter cut attachment on a supply roll of masking paper. Swallowtail cuts are produced in one end of each strip. Two

overlapping strips are utilized on each of the four sides of a window to completely cover and protect the storm sash channel structure. Additional masking material may be applied to the surrounding house siding and to the glass of the main window sashes.

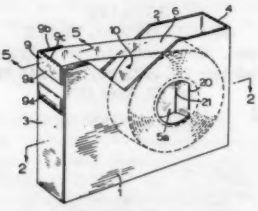


3,743,151

PAPERBOARD DISPENSER FOR TAPE

James A. Malcolm, 1 Ingleside Drive, Downsview, Ontario, Canada

Filed Feb. 4, 1971, Ser. No. 112,713
Int. Cl. B26f *3/02*
U.S. Cl. 225—47 **6 Claims**



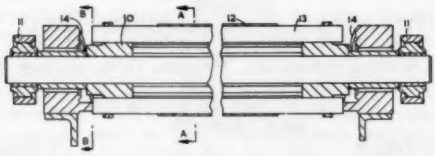
A tape dispenser is constructed from a sheet of paperboard having integral flaps partially coated with latex or other self-sealing adhesive, the coated parts being out of registry until the dispenser is set up when they are brought into registry to form a reinforcing wall and a spindle for the tape, means for cutting the tape being supported by a stiffening insert in a compartment formed at one end of the paperboard dispenser.

3,743,152

MECHANISM FOR CORRECTING ANY TENDENCY FOR A MOVING WEB TO DEVIATE FROM A REQUIRED PATH

Thomas William Greeves, Birmingham, England, assignor to Cadbury Limited, Birmingham, England

Filed July 14, 1972, Ser. No. 271,653
Claims priority, application Great Britain, July 16, 1971, 33,502/71
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 **4 Claims**



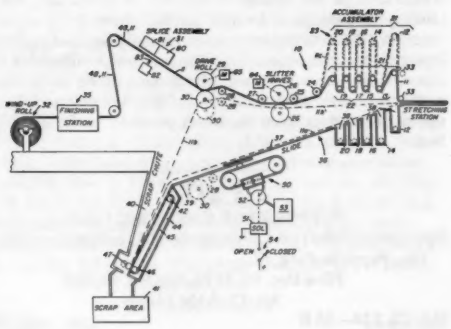
Mechanism for correcting any tendency for a moving web such, for example, as a strip of material being wound onto, or unwound from a roller, or an endless belt to deviate from a required path. The mechanism includes a rotatable roller around the periphery of which the web passes so as to be in frictional contact therewith through a predetermined arc. The periphery of the roller is in part constituted by a plurality of angularly spaced bars which are slidable longitudinally in a direction parallel to the axis of the rotation of the roller. At opposite ends of the roller respectively are a pair of relatively fixed cams for ensuring that the bars take up a predetermined longitudinal position whilst they move through the arc in which they are in frictional contact with the web. Means is provided for sensing any deviation of the web from its required path as it approaches the roller and a second pair of cams at opposite ends of the roller respectively are movable by said means to displace the bars longitudinally by an amount determined by said means whilst the bars are moving through the arc in which they are not in contact with the web.

3,743,153

APPARATUS AND METHOD FOR HANDLING A WEB

Donald R. Moss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

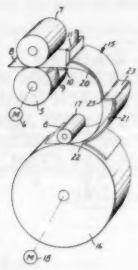
Division of Ser. No. 99,885, Dec. 21, 1970, Pat. No. 3,702,086.
This application May 30, 1972, Ser. No. 257,958
Int. Cl. B65h *17/42*
U.S. Cl. 226—91 **11 Claims**



Apparatus and method for handling a plastic web during the manufacture thereof wherein after the web exits from a stretching station a slide is provided for diverting defective web material downward to a scrap handling area. When satisfactory material is thereafter produced the web may be automatically threaded into an accumulator assembly for take-up of the web so that the downstream end of the web may be stopped to permit the defective web material to be severed from the satisfactory web material. After being severed from the defective material the satisfactory material is spliced onto a web that has been previously threaded through to the finishing end of the apparatus where a wind-up roll is positioned for storage of the satisfactory web material.

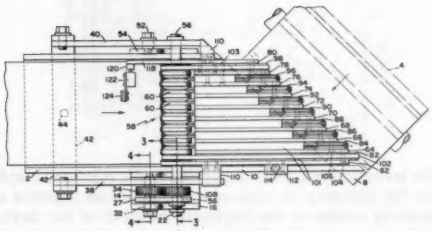
The accumulator assembly comprises first and second sets of rollers wherein the first set is stationary and the second set is movable and positionable below the path of the defective web portion. The second set is movable from its lower position where it is nestable in recesses formed in the slide to allow the defective web to pass thereover, to a raised position where it is above the first set. The movement of the second set of rollers between the rollers of the first set is utilized to thread the web in a serpentine path between the rollers of the accumulator assembly.

3,743,154
PAPER GUIDE
George W. Brewitz, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 3, 1972, Ser. No. 214,761
Int. Cl. B65h 23/04
U.S. Cl. 226—113 2 Claims



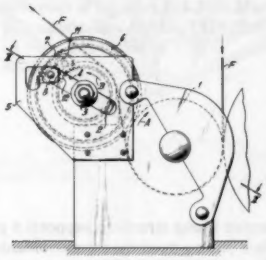
A guide for use between two driving members of a web or sheet transport where one feeding member feeds the web at a velocity greater than the succeeding feeding member which receives the web. The guide permits a controlled transverse bend to develop in the web between the feeding members to accommodate various lengths of web before operation of the first feeding member is interrupted.

3,743,155
APPARATUS FOR FEEDING SHEET MATERIAL
Russell I. Peterson, Jr., Seekonk, Mass., and David R. Coady, Thompson, Conn., assignors to Cumberland Engineering Company, Pawtucket, R.I.
Filed Jan. 18, 1972, Ser. No. 218,735
Int. Cl. B65h 17/34
U.S. Cl. 226—171 9 Claims



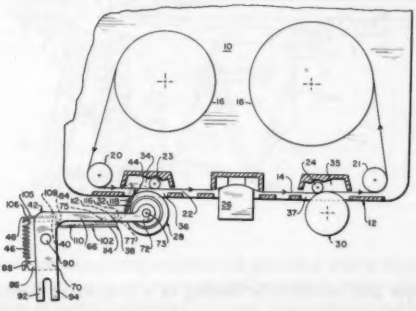
A combined feed and hold-down device for plastic cutting machines in which the feed of the stock is at an angle to the cutting apparatus, comprising a plurality of progressively shorter, moving belts positioned above the machine feed table, the forward ends of the belts lying in close proximity to the cutting means and parallel therewith, and the rear end of the belts extending at right angles across the feed table of the apparatus, the assembly of belts and their guide means being pivoted at the rear so that the forward ends may bear against the material just as the latter enters the cutting means.

3,743,156
TAKE-OFF MECHANISM FOR LOOSELY WITHDRAWING A WEB OF SHEETING FROM A DRIVEN ROLLER
Friedrich Schwarze, Hannover, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld and der Breiten Wiese, Germany
Filed June 26, 1972, Ser. No. 265,998
Claims priority, application Germany, July 2, 1971, P 21 32 893.8
Int. Cl. B65h 17/22
U.S. Cl. 226—181 3 Claims



A take-off mechanism, for loosely withdrawing a web of material from a driven roller, particularly an embossing roller, comprising friction wheels engaged with end portions of the driven roller and having internal toothing meshed with a rotatable fixed pinion, a further rotatable fixed pinion meshed with the pinion and with a gear wheel rotatably mounted on a non-rotatable shaft, the gear wheel being drivably connected to a take-off roller rotatably mounted on said shaft and of smaller diameter than the driven roller and the mechanism being so proportioned and disposed that the peripheral speed of the take-off roller is equal to the peripheral speed of the driven roller.

3,743,157
TAPE DRIVE APPARATUS FOR CASSETTES
Roy Glenn Mason, Santa Clara, Calif., assignor to Anderson Jacobson Inc., Sunnyvale, Calif.
Filed May 1, 1972, Ser. No. 249,385
Int. Cl. B65h 23/10
U.S. Cl. 226—195 11 Claims



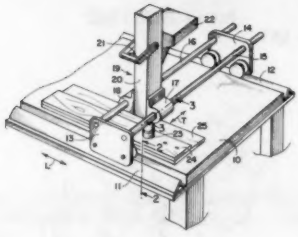
There is herein disclosed tape tensioning apparatus comprising a spring loaded follower member associated with a pinch roller of the tape drive mechanism and continuously engageable with magnetic tape of a cassette to maintain uniform tension of the tape as it approaches and passes through the recording head.

3,743,158

ROLLER MOUNTED NAILING MACHINE

Harold J. Cohn, 645 Haverford, Pacific Palisades, Calif., and Clyde Weems, 1174 Industrial Avenue, Oxnard, Calif.

Filed Mar. 31, 1971, Ser. No. 129,923
Int. Cl. B27f 7/02
U.S. Cl. 227—8 6 Claims



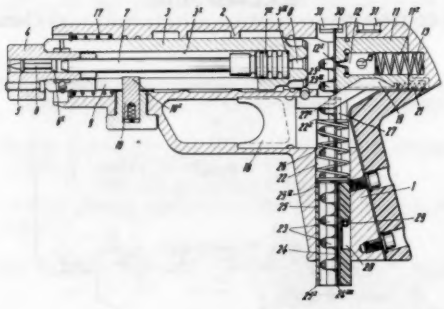
A roller mounted frame structure supports a pneumatically operated one shot nailing machine for movement along a work into which nails are to be driven. The arrangement is such that the nailing machine may be positioned over any selected point on the work and upon operation of the machine, a major portion of the machine drops on the work thus holding it while a nail is driven into the work by a single pneumatic blow.

3,743,159

CARTRIDGE-ACTUATED FASTENER-DRIVING TOOLS

Fritz Schneider, Burgbernheim, Germany, assignor to Impex-Essen GmbH, Ansbach, Germany

Filed Jan. 13, 1972, Ser. No. 217,563
Claims priority, application Germany, Jan. 14, 1971, P 21 01 499.3
Int. Cl. B25c 1/14
U.S. Cl. 227—10 9 Claims



Simple and trouble-free feeding of a strip-form cartridge magazine into a fastener-driving tool is achieved by providing a displaceable member for this purpose alone which is unconnected with other tool functions.

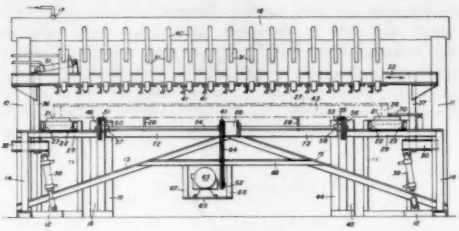
The active member is effectively a spring-loaded tube which is fitted into the hand-grip portion of the tool, normally projects outwardly therefrom to a distance equal to the cartridge spacing along the magazine strip, and through which the magazine is fed.

3,743,160

APPARATUS FOR SECURING SHEATHING TO PANEL FRAMES

Grayson Hunter Bowers, Jr., Sixth and East Sts., Frederick, Md.

Continuation-in-part of Ser. No. 25,563, April 8, 1970, abandoned. This application Sept. 24, 1971, Ser. No. 183,567
Int. Cl. B27f 7/02
U.S. Cl. 227—100 4 Claims



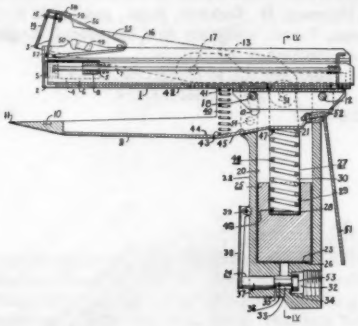
An apparatus is provided for securing sheathing to panel frames which combines a battery of pneumatic nailing devices with conveyor means for moving the panel and sheathing assembly longitudinally and pneumatic means for moving the nailing devices transversely with respect to the panel and sheathing assembly.

3,743,161

FASTENER APPLYING DEVICE

Herman J. Spencer, 2918 Marshall Road, Pittsburgh, Pa.

Filed June 18, 1971, Ser. No. 154,537
Int. Cl. B25c 5/02
U.S. Cl. 227—124 8 Claims



This invention relates to a pneumatically operated stapling device for fastening multiple pieces of material together and particularly relates to the improved location of the device's manual gripping handle. The device has an upper member that has an ejection chute at one of its ends to guide a reciprocably mounted driver and the upper member has means for guiding and feeding staples to the ejection chute. The upper member is pivotally connected to one end of an underlying base member that has a free end that is pointed for piercing material and has an anvil section for gripping material against the upper member while clinching the legs of a staple ejected from the upper member. Rigid means is operably connected to the driver, to the base member and to a piston that is reciprocably mounted in a cylinder that is attached to one of the members. One end of the cylinder is closed but has means for intermittently admitting pressure air into its closed end to exert pneumatic pressure against both members to move them to grip op-

posite sides of material while the inducted pressure air is moving the piston against the rigid means to force the driver to eject a staple into the material.

A hand grip for the palm and the fingers of one hand is attached to the device to provide a hand gripping surface that extends substantially at right angle to the direction taken by the pointed end of the base member when piercing material so that manual pressure against the hand grip to force the pointed end of the base member to pierce material will be absorbed directly against the palm of the operator's hand.

3,743,162

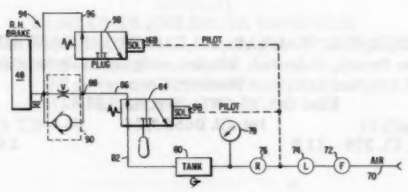
FRICTION WELDING BRAKE SYSTEM

Arthur F. Gage, Warren, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1971, Ser. No. 110,221

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **4 Claims**



An apparatus for frictionally welding two workpieces together including drive means for rotating one of said workpieces and braking means associated with the drive means. The braking means is operable in two modes of operation, a normal slow mode as required by a particular weld cycle, and an emergency mode of operation in which the full braking force is applied to brake as fast as possible.

3,743,163

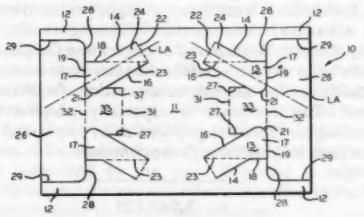
DIVIDER PARTITIONS FOR ARTICLE CARRIERS

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 14, 1972, Ser. No. 226,001

Int. Cl. B65d *15/00*

U.S. Cl. 229—15 R **6 Claims**



A divider partition for an article carrier, such as for bottles arranged in a pair of side by side rows, the divider partition being formed from a cut and scored blank to provide fingers extending laterally therefrom, the distal portions of such fingers extending between the bottles and slightly beyond a plane marked by the line of centers of the bottles of a row. The laterally extending fingers are hinged to a central panel of the divider partition along fold lines which are laterally spaced from each other in the central panel and disposed in non-parallel relationship to each other. The longitudinal axis of the fingers extends perpendicularly to such lines of fold, and the fingers extend laterally of the central panel. The laterally extending fingers have auxiliary fold lines therein enabling the fingers to diverge from each other in upward and downward directions, with the distal portions thereof enabled to be tangent to the bottles and to extend between the same, and to lie in vertical planes extending normal to the plane of the central panel.

3,743,164

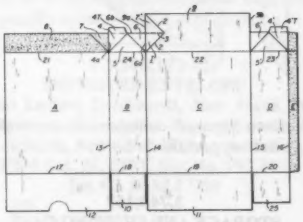
CONTAINER WITH RECLOSABLE PULL-OUT POURING SPOUT

David A. Clark, 250 N. Maguire No. 107, Tucson, Ariz.

Continuation-in-part of Ser. No. 124,332, March 15, 1971, abandoned. This application June 1, 1971, Ser. No. 143,697

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 R **10 Claims**



A container for packaging comminuted dry products or the like is provided which has a self-contained reclosable pull-out pouring spout. The container is formed from a single blank of sheet material and, when initially setup, forms a sift-proof container having a flat top and with the pouring spout in a retracted closed position.

3,743,165

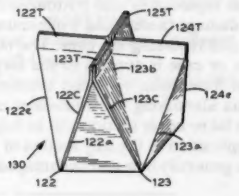
LIQUID DISPENSING CONTAINER

Arthur W. Hopkins, Stonebridge Road, Cornwall, N.Y.

Filed May 18, 1971, Ser. No. 144,555

Int. Cl. B65d *5/72*

U.S. Cl. 229—17 **12 Claims**

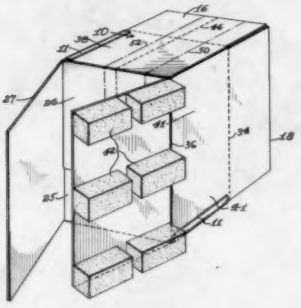


A liquid dispensing container is provided with a dispensing spout on one side and a corresponding recess on the other side so that adjacent containers can nest. The container is designed so that it can be opened by pulling apart two tabs, so that the body of the container is not held during the opening operation.

In one modification, the container is made from a paper blank which is a generally rectangular sheet having generally parallel opposed free side edges.

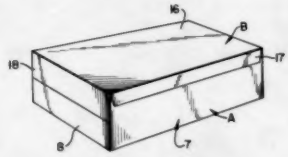
The container is provided with score lines so as to enable the blank to be folded to form a container with a peak top.

3,743,166
UNITARY PALLET PACK CONTAINER
Larry W. Heavner, Lisle, Ill., assignor to Coronet Container Corporation, Lombard, Ill.
Filed Sept. 7, 1971, Ser. No. 178,298
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 R **9 Claims**



A knock-down type of container incorporating a pallet structure as a unitary part thereof.

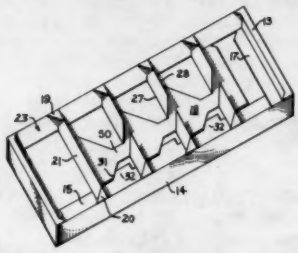
3,743,167
STORAGE AND SHIPPING CASE
Lee E. Russell, 2114 Idlewild Avenue, Tampa, Fla.
Filed June 30, 1971, Ser. No. 158,454
Int. Cl. B65d *5/18, 13/00*
U.S. Cl. 229—23 BT **2 Claims**



A two-piece case or carton including a bottom section or tray in which canned fruits, vegetables, or the like, may be stored after canning in the production season, and from which the cans may be readily removed at a later date for labelling and thereafter replaced in said bottom or tray section with a minimum of damage thereto and a minimum of labor involved in removing and replacing the cans. The other, cover section of the carton or case is applied to the tray section after the labelled cans have been replaced therein and can include printed indicia identifying the wholesaler or purchaser of the product. The lid or cover section will be bright and new at the time of its application to the tray section to provide a shipping case having a generally new and undamaged appearance.

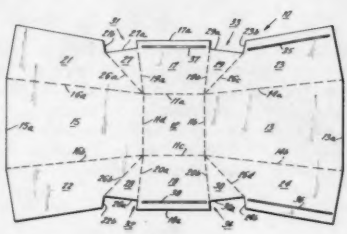
3,743,168
CARTON WITH SELF LOCKING CELLS
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westaco Corporation, New York, N.Y.
Filed July 29, 1971, Ser. No. 167,340
Int. Cl. B65d *5/48*
U.S. Cl. 229—28 R **7 Claims**

A compartmented carton having a plurality of self-locking cells is constructed from a single blank of paperboard which is divided into several longitudinal panels, a plurality of spaced corner braces, and a plurality of transverse partition panels, the front panel of which is cut and scored to define one or more gang lift elements, the improvement including a locking means integral with each gang lift element for engaging other cooperating locking means on the closure flaps of the carton



to automatically position and lock each gang lift element in its cell forming position when the carton is set-up.

3,743,169
NESTABLE, STACKABLE, LEAK-PROOF CONTAINER
Rune Person, Halmstad, Sweden, assignor to Sprinter System of America, Ltd., East Windsor, Conn.
Filed Oct. 13, 1971, Ser. No. 188,827
Int. Cl. B65d *5/24*
U.S. Cl. 229—31 R **2 Claims**

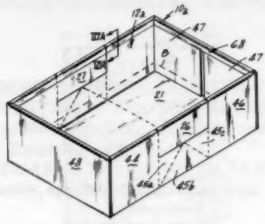


A nestable, stackable open-ended container having a leak-proof characteristic at least to the extent required for its specific application. The container is formed from a single sheet of stock which is scored, provided with stripes of adhesive positioned along selected marginal portions thereof and then bent to form a container of slightly tapered configuration with a narrower base portion widening to the openended mouth thereof. The tapered configuration facilitates the nesting of a large number of such containers into one another. The substantially box-shaped configuration facilitates stacking thereof. The container is especially adapted for use in dispensing hot buttered popcorn so as to prevent the melted butter from leaking through the container.

3,743,170
CONVERTIBLE PACKAGE
Katherine Della Riccio, Chicago, Ill., assignor to Consolidated International Chemical Co. Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 830,938, June 6, 1969, Pat. No. 3,581,975. This application Dec. 1, 1970, Ser. No. 94,079
Int. Cl. B65d *5/22*
U.S. Cl. 229—33 **10 Claims**

A box or carton having a compact closed product storage position which is easily unfolded into an enlarged tray or pan position with hinged side wall portions providing struts to maintain the opened pan or tray position and to serve as a gate providing access to the interior of the tray or pan. In the closed position, the box or carton is a small six-sided, sealed package preferably housing a bag of absorbent ground clay. In the open tray or pan position, the box or carton has a flat bot-

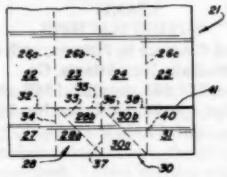
tom and relatively high side and end walls so that when the clay is spread over the bottom, it will provide a bed or substantially less thickness than the height of the side and end walls and serving as a commode for small house pets, such as cats and the like.



3,743,171
CONTAINER AND BLANK THEREFOR

Terrill L. Nederveld, Neffsville, Pa., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Nov. 16, 1971, Ser. No. 199,278
Int. Cl. B65d 5/02, 65/00
U.S. Cl. 229—40 **12 Claims**



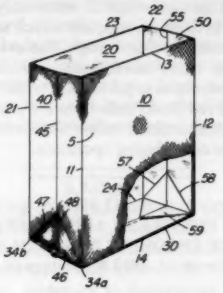
A container is provided which is formed from a blank of foldable sheet material. The container has foldably connected panels which define a tubular member. Closure flaps are foldably connected at one end of certain of said panels and cooperate therewith to close said one end of the tubular member. A first closure flap is connected to one panel and overlies the end of the tubular member. A second closure flap is connected to a second panel, disposed next to the one panel, and is provided with foldably connected triangular sections arranged in overlapping face-to-face relation. The folded triangular sections overlie the exposed surface of the first flap. One of the triangular sections is foldably connected to the first flap. A third closure flap is connected to a third panel, disposed next to the second panel, and is also provided with foldably connected triangular sections arranged in overlapping face-to-face relation. The latter sections overlie the exposed surface of the first flap. One of the third flap sections is foldably connected to one of the second flap sections. A fourth closure flap is foldably connected to the third flap and is angularly disposed with respect thereto and effects retention of the first, second, and third flaps in end-closing relation.

3,743,172
QUILTED LAMINAR FILMS COMPRISING AT LEAST TWO LAYERS OF DISSIMILAR MATERIAL

Kenneth E. Ackley, Pittsford, and Arnold F. Sparks, Holcomb, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 23, 1971, Ser. No. 127,096
Int. Cl. B65d 33/02
U.S. Cl. 229—55 R **4 Claims**

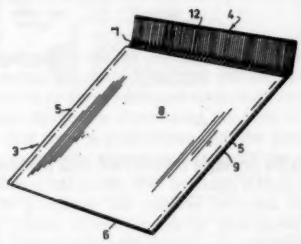
A quilted laminar film structure comprising two layers of dissimilar thermoplastic, for example, one layer of low-density polyethylene and another layer of high-density polyethylene which are heat sealed together along a plurality of intersecting heat seal lines. Such laminar materials are adapted for employment as over wrap packaging materials, thermoplastic bag structures and, in particular, thermoplastic bags characterized by having a specific square bottom configuration.



3,743,173
IMPROVED ENVELOPE

Noel Emanuel Lasker, Leichhardt, New South Wales, Australia, assignor to Corrugated Paper Manufacturing Pty., Limited, Leichardt, New South Wales, Australia

Filed Oct. 26, 1971, Ser. No. 192,278
Int. Cl. B65d 27/00
U.S. Cl. 229—68 **3 Claims**

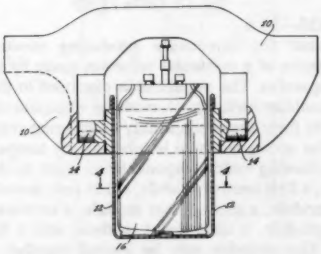


The invention relates to a lightweight envelope having corrugated internal faces which serve to rigidify the envelope construction and also serve to protect an article or articles placed in the envelope from damage.

3,743,174
CENTRIFUGE ROTOR HEAD AND SAMPLE HOLDER ASSEMBLY

Kenneth G. Drucker, Astoria, Oreg., assignor to Rio-Consultants, Inc., South Gate, Calif.

Filed Sept. 2, 1970, Ser. No. 69,004
Int. Cl. B04b 9/12
U.S. Cl. 233—26 **1 Claim**



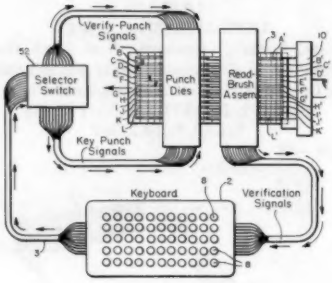
An improved centrifuge material carrier is provided which has general utility, but which is particularly useful for subject-

ing whole blood contained in flat plastic bags to a centrifuge action so as to separate the red cells from the plasma in the blood. The carrier to be described includes an oneast one cup of an oval cross-section which is removably supported on a centrifuge rotor in trunion rings, and which serve as a receptacle for the aforesaid flat plastic bags. The oval cross-section of the cup provides many advantages, including the fact that swirl during deceleration is prevented, which leads to a better separation of the red blood cells from the plasma, with no tendency for the constituents to recombine during the operations subsequent to the centrifuging operation.

3,743,175
OFFSET KEY PUNCH KEY AND VERIFIER MACHINE FOR ENCODING PUNCH CARDS

Anthony E. Maciorowski, 4913 N. Normandy Avenue, Chicago, Ill.

Filed June 28, 1971, Ser. No. 157,414
Int. Cl. G06k *1/04*
U.S. Cl. 234—30 **9 Claims**



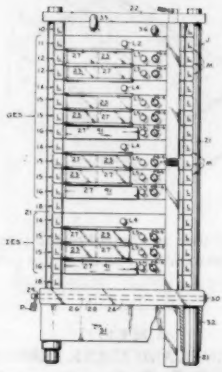
Apparatus for coding a record card with paraindex punches wherein the card is punched with paraindex punches and such punches are used to control the punching of the index punches. The sensing of the paraindex punch functions to verify the accuracy of the punching of the index punch. During the index punch cycle an index punch key is depressed to activate an index punch impulse. If the index punch cycle does not correspond to the paraindex punch the apparatus locks prior to enconding the card with an index punch. If an erroneous paraindex punch was made in the card during the paraindex punch cycle, the operator switches to an override system and punches the correct index punch key.

3,743,176
VOTING MACHINE

Roy A. Martin, 809 Wellesley Drive N.E., and Clarence E. Pittman, 2479 Peachtree Road N.E., both of Atlanta, Ga.

Division of Ser. No. 755,688, Aug. 27, 1968, abandoned. This application Apr. 28, 1972, Ser. No. 248,669
Int. Cl. G07c *13/00*
U.S. Cl. 235—50 A **4 Claims**

Apparatus for selectively producing electrical pulses representative of a particular selection made by the operator of the apparatus. The apparatus is disclosed in the form of a voting machine built up of modular components which fit together to form any of a plurality of different voting arrangements. The voting machine is substantially tamper-proof and has the following basic components: an input module, a frame assembly, a first control module, a first vote module, a second control module, a second vote module, a terminal module, a write-in module, a slave input module, and a third control module. The modules may be placed together in selected fashion to define a voting machine for voting in any type of political race and which will prevent overvoting. The different modules fit together in such manner that they cannot be separated without a key to unlock the same, thereby reducing the possibility of tampering with the electron results.

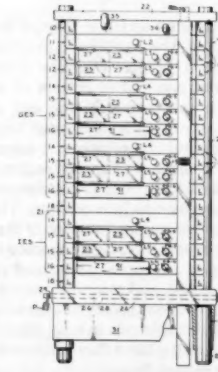


Moreover, each module is constructed in such manner that the module may be checked prior to assembly of the voting machine to insure proper functioning of the module once it is assembled.

3,743,177
VOTING MACHINE

Roy A. Martin, and Clarence E. Pittman, both of Atlanta, Ga., assignors to LectraData, Inc., Atlanta, Ga.

Division of Ser. No. 755,688, Aug. 27, 1968, abandoned. This application Apr. 28, 1972, Ser. No. 248,665
Int. Cl. G07c *13/00*
U.S. Cl. 235—51 **4 Claims**



Apparatus for selectively producing electrical pulses representative of a particular selection made by the operator of the apparatus. The apparatus is disclosed in the form of a voting machine built up of modular components which fit together to form any of a plurality of different voting arrangements. The voting machine is substantially tamper-proof and has the following basic components: an input module, a frame assembly, a first control module, a first vote module, a second control module, a second vote module, a terminal module, a write-in module, a slave input module, and a third control module. The modules may be placed together in selected fashion to define a voting machine for voting in any type of political race and which will prevent overvoting. The different modules fit together in such manner that they cannot be separated without a key to unlock the same, thereby reducing the possibility of tampering with the election results.

Moreover, each module is constructed in such manner that the module may be checked prior to assembly of the voting machine to insure proper functioning of the module once it is assembled.

3,743,178

CONTROL DEVICE FOR TOTALIZING MECHANISMS OF REGISTERING BUSINESS MACHINES

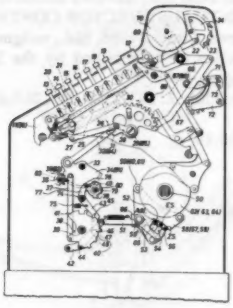
Gerhard Rethmeier, Oldentrup, Germany, assignor to Anker-Werke AG, Bielefeld, Germany

Filed Sept. 28, 1970, Ser. No. 75,878

Claims priority, application Germany, Sept. 27, 1969, P 19 48 976.0

Int. Cl. G06c *21/00*

U.S. Cl. 235—60 MT **9 Claims**



Control device for totalizing mechanisms of registering business machines includes a plurality of calculating mechanisms including a plurality of summing mechanisms and a plurality of totalizing mechanisms, the plurality of totalizing mechanisms respectively having positive and negative calculating wheels, clutch members connected to the totalizing mechanisms, a plurality of calculating mechanism selector means operatively connected to the clutch members for acting thereon so as to select a respective individual totalizing mechanism from the plurality of totalizing mechanisms, control and calculating mechanism selector banks, at least one thereof having a differential mechanism operatively connected to the calculating mechanism selector means, respectively, for setting the same, each of the totalizing mechanisms being adjustable for activating the positive and negative calculating wheels thereof, the totalizing mechanisms being activatable and selectable by the same one of the calculating mechanism selector means.

3,743,179

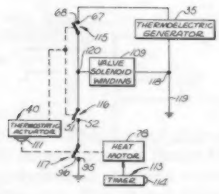
OVEN WITH AUTOMATIC COOK AND KEEP WARM MODE SELECTION

Richard Davis Grayson, Arcadia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 12, 1972, Ser. No. 252,719

Int. Cl. F23n *5/06*

U.S. Cl. 236—15 A **3 Claims**



A system for maintaining an oven at a selected cooking temperature and for reducing the oven temperature to keep the food warm after it has been cooked for a selected length of time. One or more thermostatic actuators perform the cook and keep warm functions through two respective switches which are rendered effective by a mechanically operable bistable switch. The bistable switch is moved to one position by a heat motor that is actuated momentarily by a timer. At least one thermostatic actuator has a knob to set the cooking temperature. When this knob is set to the OFF position, the bistable switch is automatically returned thereby to its other position.

3,743,180

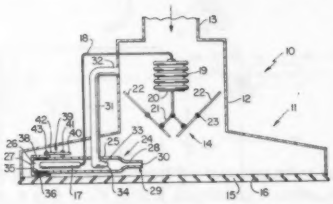
HEAT EXCHANGER SYSTEM AND METHOD AND PARTS THEREFOR OR THE LIKE

Charles H. Perkins, Richmond, Va.; Harold G. Brakebill, Concord, Tenn.; Earl Goff, and Edward N. Caldwell, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 17, 1972, Ser. No. 244,756

Int. Cl. F24f *11/04*

U.S. Cl. 236—1 C **20 Claims**



A heat exchanger system having a flow path for heat exchanger treated air of one condition thereof to be directed to an area that is to be conditioned by heated air and having damper means therein for controlling the flow of treated air through the flow path in accordance with the temperature of the air in the area being sensed by a temperature sensing unit for controlling the damper means. A control device is provided for causing the temperature sensing unit to sense only the temperature of the treated air in the flow path when the condition of the treated air is reversed from said one condition thereof to another condition thereof whereby the damper means will then be under control of the temperature of the treated air rather than under the control of the temperature of the air in the air being treated thereby.

3,743,181

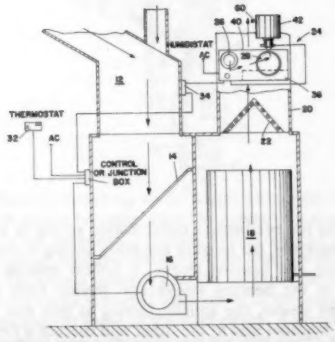
AIR TREATMENT APPARATUS

Roy G. Bentley, 1356 Luckee Avenue, Heath, Ohio

Filed Apr. 19, 1972, Ser. No. 245,521

Int. Cl. G05d *22/00*

U.S. Cl. 236—44 R **8 Claims**



A humidifier includes a ducting system associated with an apparatus housing, a moisture pad which rotates to pick up

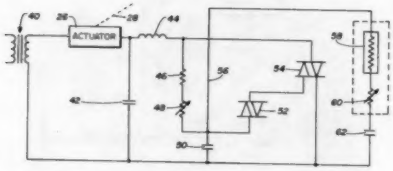
liquid from a pool in the bottom of the housing and a blower for drawing air into the housing and subsequently forcing it out. The blower is actuated, usually by some humidity-sensing device, to blow a stream of air over and through the moist pad, which air exits in a more humid state than when it entered. A container of deodorizing liquid or the like is mounted on the housing above the moisture pad for dispensing said liquid to the pad. The liquid may be for deodorizing, disinfecting and/or medication, such as some prescription drug needed by the occupant of the enclosure serviced by the humidifier. Control equipment is included to regulate the feed of the liquid to the pad.

3,743,182

TEMPERATURE SENSITIVE CONTROLS FOR AIR CONDITIONING SYSTEMS

Kermit S. Harmon, 428 Salem Drive, Richardson, Tex., and Donal W. Loosley, 10512 Wyatt, Dallas, Tex.

Filed Oct. 1, 1970, Ser. No. 77,056
Int. Cl. G05b *11/06*; G05d *23/24*
U.S. Cl. 236—78 **3 Claims**



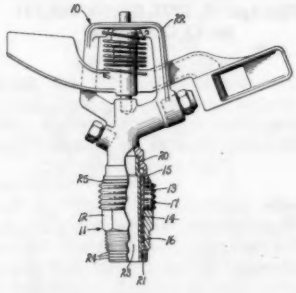
The specification discloses a system for controlling the flow of various fluids in air conditioning systems. A sensor detects the ambient temperature of the area to be conditioned and circuitry responsive to the sensor provides electrical signals which vary in accordance with the ambient temperature. Various actuators are disclosed which are operable in dependence upon the electrical signals for modulating the flow of fluids in order to maintain the temperature of the area.

3,743,183

COMPRESSION SPRING SHROUD

William R. Malcolm, 314 W. San Jose, Fresno, Calif.

Filed Oct. 12, 1971, Ser. No. 187,994
Int. Cl. B05b *3/00*
U.S. Cl. 239—264 **9 Claims**



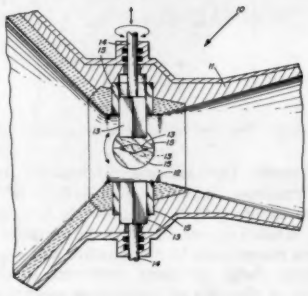
A shroud for enclosing a compression spring in a sprinkler bearing assembly, the bearing assembly having a unitary bearing housing and bearing sleeve, a hollow spindle rotatably received in the bearing sleeve and having ends extending beyond the sleeve, the spindle having at one end thereof a discharge member and at the other end thereof a first bearing seal, a second bearing seal disposed about the end of the sleeve adjacent to the discharge member, and the compression spring positioned about the sleeve between the second bearing seal and the bearing housing urging the spindle upwardly in the sleeve. The shroud is mounted in sealing relation to the compression spring between the second bearing seal and the bearing housing in simultaneous sealing relation therewith to shield the spring from exposure to abrasive and corrosive substances so as to minimize wearing of the second bearing seal and to preclude the introduction of such substances to the bearing assembly and is adapted to flex with the spring during oscillation and/or rotation of the discharge member so as to maintain its sealed relation with the compression spring, second bearing seal and bearing housing.

3,743,184

CYLINDRICAL THROAT NOZZLE WITH MOVABLE SONIC BLADES FOR OBTAINING DUAL AREA THROAT AND THRUST VECTOR CONTROL

H. Vincent Mancus, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 7, 1972, Ser. No. 269,672
Int. Cl. B63h *11/10*
U.S. Cl. 239—265.19 **7 Claims**



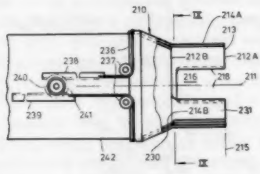
A nozzle having four blades extending radially therein about the inner periphery thereof. Each blade reciprocates radially with respect to the axis of the nozzle to control the cross-sectional area of the nozzle and thereby serves as a thrust mass control. The blades are also independently capable of rotating motion to form a thrust vector control in any plane.

3,743,185

NOISE SUPPRESSOR FOR JET ENGINES

John Eirwyn FFowces-Williams, Ewell, Surrey; Roy Hawkins, Filton, Bristol; Hylton Dawson, Pucklechurch, Bristol, and William Smith, Yate, Bristol, all of England, assignors to Secretary of State Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 23, 1971, Ser. No. 201,375
Claims priority, application Great Britain, Nov. 30, 1970, 5,688/70; Nov. 26, 1970, 3,234/70
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.27 **5 Claims**



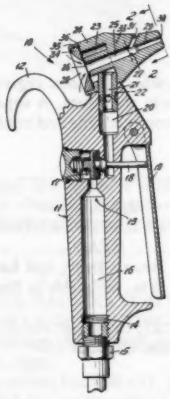
The disclosure of this invention pertains to an exhaust nozzle for jet engines wherein the nozzle has a generally circular

outlet opening defined by an edge lying in a plane normal to the nozzle axis except at two diametrically opposite localities at each of which the edge defines a recess where the nozzle is laterally open to the ambient air. The presence of the recesses causes the jet to spread in the plane of the recesses with the effect of sound suppression in that plane.

3,743,186
AIR GUN

Zenon R. Mocarski, Easton, Conn., assignor to SRC Laboratories Inc., Fairfield, Conn.

Filed Mar. 14, 1972, Ser. No. 234,535
Int. Cl. B05b 7/12
U.S. Cl. 239—413 **10 Claims**

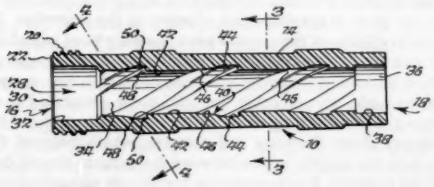


An air gun for providing a stream of air comprising a hollow tube having an entrance open to the atmosphere, an intermediate throat and an exit with pressurized air being directed through a small slit adjacent the throat to combine with air from the atmosphere and be ejected from the exit as a usable stream. The pressurized air is safely directed from the gun by other than the exit when the exit is closed to prevent a pressure build-up at the exit.

3,743,187
NOZZLE

Maurice C. Breunsbach, Hamburg, N.Y., assignor to Spirolet Corporation, North Tonawanda, N.Y.

Continuation of Ser. No. 77,880, Oct. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 7,747, Feb. 2, 1970, Pat. No. 3,692,243. This application June 26, 1972, Ser. No. 266,393
Int. Cl. B05b 1/34
U.S. Cl. 239—489 **15 Claims**

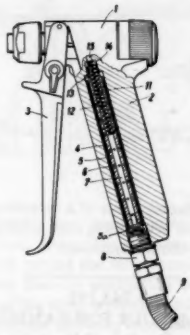


An elongated hollow body formed of an elastomeric material having a bore therethrough. A thread formation of helical configuration is formed in the bore which gradually tapers towards its outlet end. The thread formation comprises a spiral projection and groove separated by a sloping shoulder extending forwardly from the projection of the groove.

3,743,188
SPRAY GUN

Josef Wagner, Markdorferstr. 165, 7991 Friedrichshafen-Fischbach, Germany

Filed Nov. 9, 1971, Ser. No. 197,095
Claims priority, application Germany, Nov. 13, 1970, P 20 55 936.8
Int. Cl. B05b 1/30
U.S. Cl. 239—575 **1 Claim**

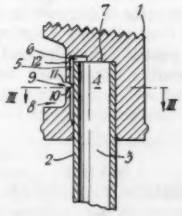


A spray gun of the type used for spraying paint and the like which has a gun body with a depending handle, the handle being hollow and having a filter unit disposed axially therein, the filter unit being spring-biased so as to eject for easy removal.

3,743,189
NOZZLES

Richard Terence Macquire-Cooper, Navron House, St. Helens Avenue, Benson, England

Filed Aug. 16, 1971, Ser. No. 171,966
Claims priority, application Great Britain, Aug. 17, 1970, 39,601/70
Int. Cl. B05b 1/04
U.S. Cl. 239—579 **20 Claims**



A mechanical break-up spray nozzle comprises two members which define between them, by means of a channel in at least one of the members, a passage having one end closed and its opposite end communicating with an inlet cavity, an outlet orifice of the nozzle opening into the passage intermediate its ends and the cross-sectional dimensions of the passage being small in relation to those of the inlet cavity. A nozzle member is also provided which incorporates the inlet cavity, the groove and also the outlet orifice.

3,743,190

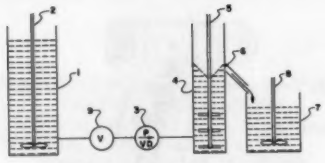
HARD MEDIA BENEFICIATION PROCESS FOR WET CLAY

James Brooks Whitley, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 885,168, Dec. 15, 1969, Pat. No. 3,667,689. This application Oct. 22, 1971, Ser. No. 191,654

Int. Cl. B02c *13/00*

U.S. Cl. 241—4 **7 Claims**



A method of producing clays of a selectively reduced particle size and increased brightness, uses a hard, relatively dense grinding medium on the wet minerals.

3,743,191

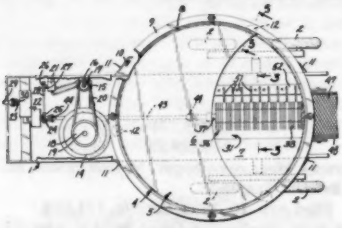
ANTI SLUG DEVICE FOR HAMMERMILLS

Robert R. Anderson, Greeley, Colo., assignor to Farmhand, Inc., South Hopkins, Minn.

Filed Aug. 5, 1971, Ser. No. 169,276

Int. Cl. B02c *13/04*, *13/13*, *21/02*

U.S. Cl. 241—73 **4 Claims**



A portable feed grinder including an open topped feed receiving tub mounted on a mobile frame and having a generally horizontal stationary bottom wall and a peripheral side wall mounted for rotation on the generally vertical axis of the tub. A hammermill rotor is disposed in an opening in the tub bottom wall for feed grinding rotation on a generally horizontal axis and is partially encompassed by an underlying perforate screen member. Stationary hammer elements mounted on the bottom wall cooperate with hammers on the rotor to chop or grind material in the tub.

3,743,192

COMMINUTOR-MIXER

Friedrich Otto, Hameln, Weser, Germany, assignor to A. Stephan Und Sohne, Hameln/Weser, Germany

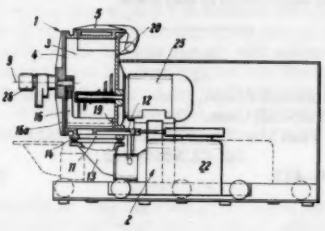
Filed July 6, 1971, Ser. No. 159,868

Claims priority, application Germany, July 8, 1970, P 20 33 788.6

Int. Cl. B02c *18/14*

U.S. Cl. 241—101 B **10 Claims**

A comminutor-mixer has a first and a second stage. The first stage includes a drum having a peripheral wall and a horizontal axis with a rotatable shaft extending through the drum in parallelism with the axis thereof and carrying coarse-comminuting and mixing tools. A drive rotates the shaft and an outlet is provided in the peripheral wall at a downwardly directed portion. Located beneath the drum is a second comminuting stage including a receptacle having an upwardly directed inlet and being mounted for horizontal movement to



and from a position in which the inlet registers with the outlet to receive material from the drum. A separate drive is provided for driving fine-comminuting and mixing tools located in the receptacle.

3,743,193

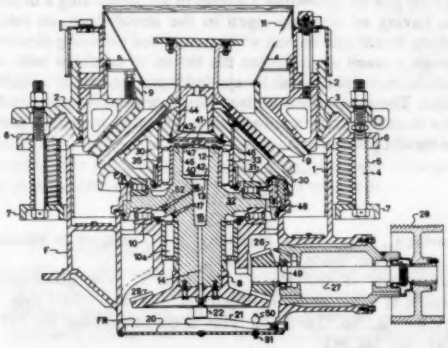
GYRATORY CRUSHER HAVING ANTI-SPIN MEANS FOR HEAD

Ronald B. DeDiemar, Brown Deer, and Le Roy J. Schuman, Milwaukee, both of Wis., assignors to Barber-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,553

Int. Cl. B02c *2/04*

U.S. Cl. 241—207 **7 Claims**



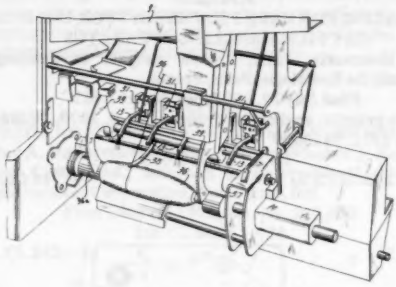
A gyratory or cone type crusher having a generally conical crushing head rotatably mounted on an upright eccentric so that the head is gyrated upon rotation of the eccentric. The stationary frame of the crusher has a crushing bowl including a concave which surrounds the crushing head and cooperates with it to form an annular crushing chamber. The material such as rock, ore, or other material to be processed is distributed to the crushing chamber by feeding the material into a hopper above the cone and concave, which material then falls into the annular space between the conical shaped head and the concave. The eccentric is continually rotated to cause the head to gyrate in respect to the concave, thereby effecting crushing action upon the material. Means are provided in the present crusher and located between the eccentric and the head for rotating the crusher head in a direction opposite to that in which the eccentric rotates, whereby the head is maintained rotationally stationary in respect to the concave at a no-load condition.

3,743,194

QUILL WINDER CLEANING UNIT

Bernard Barettella, 688 Maple Avenue, Ridgefield, N.J.

Filed Jan. 3, 1972, Ser. No. 214,807
Int. Cl. B65h *54/34*
U.S. Cl. 242—27 5 Claims



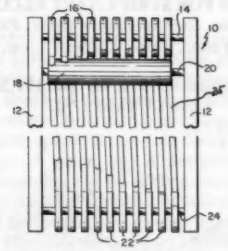
A pneumatic blowing unit operable with an automatic quill winder mechanism for cleaning lint and other foreign matter from each bobbin during winding by said winder.

3,743,195

FILM PROCESSING RACK HAVING OVERDRIVEN, INDIVIDUALLY DEFLECTING SPOOLS

Alex Bagdasarian, Waltham, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 840,127, June 24, 1969, Pat. No. 3,615,061, which is a continuation-in-part of Ser. No. 620,703, March 6, 1967, abandoned. This application June 25, 1971, Ser. No. 156,878
Int. Cl. B65h *17/42*
U.S. Cl. 242—55.01 7 Claims



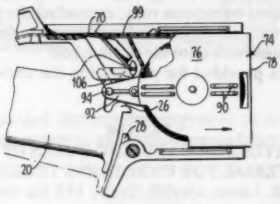
An improved film transport device for transporting film or other strip material therethrough which device includes a rack having a top driven shaft and a plurality of primary overdriven spools thereon. The primary overdriven spools are spring spools and are adapted to deflect individually. Disposed below the primary overdriven spools is a continuously driven friction drive roller. On the lower part of the device is a secondary shaft having a plurality of idle spools thereon. The film supported by the primary and secondary spools defines a side-by-side loop-to-loop arrangement of the film within the device. The spring spools are all overdriven spools and when an increase in film tension is felt within one or more loops, the primary spool or spools supporting the loops deflects toward the friction drive roller and contacts the friction drive roller whereby a peripheral overdriving force is imparted to said deflected spools. This overdriving force imparts an additional rotative force to the deflected spools thereby overcoming the increase in film tension.

3,743,196

CARTRIDGE FOR USE WITH AN EMBOSSING TOOL HAVING SELF-LOADING TAPE FEED MECHANISM

John McMahon, Livermore, Calif., assignor to Dymo Industries, Inc., Emeryville, Calif.

Division of Ser. No. 875,467, Nov. 10, 1969, Pat. No. 3,637,060. This application July 26, 1971, Ser. No. 166,185
Int. Cl. B65h *17/44*, *75/02*
U.S. Cl. 242—55 3 Claims



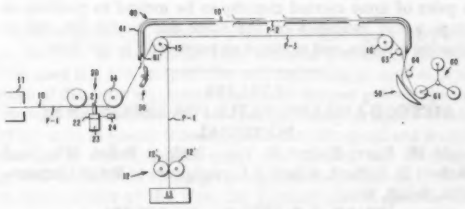
A cartridge containing embossable strip material for use with an embossing tool, the cartridge having a tangential extension, a resilient tab urging the strip material against a surface of the extension thereby permitting only undirectional forward movement of the strip material, and guide means engageable with the tool and allowing fore and aft movement of the cartridge to thereby move the strip material toward the embossing station of the tool.

3,743,197

METHOD OF AND APPARATUS FOR HANDLING MATERIAL

William E. Hawkins, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1971, Ser. No. 172,308
Int. Cl. B65h *35/02*
U.S. Cl. 242—56.6 16 Claims



A material handling method including a method of threading a strip of material, such as plastic film, into a pneumatic moving means including the steps of moving a web of film from a supply source along a first path by first moving means; slitting the web as it moves in the first path to form a leader strip; moving the strip in the first path by the first moving means and into operative relationship with a pneumatic moving means threadup device; thrusting the leader strip into threadup position with respect to a pneumatic second moving means including at least a strip first transport tube having a strip entrance opening positioned adjacent the first path; cutting the thrust strip while it is in this threadup position; and, pulling the leading edge of the cut strip into the entrance opening of such transport tube to thread it into such pneumatic second moving means. Such web handling method further includes a method of threading such strip and the web it is formed from onto a windup roll for winding thereupon including the steps of moving the strip in a second path by the pneumatic second moving means and through a strip exit opening of a strip transport tube of the pneumatic second moving means and into operative relationship with a windup

roll threadup device consisting of a curved guide chute having spaced flexible members connected thereto, such flexible members being in contact with the surface of a windup roll and air currents from the exit opening of such transport tube passing along the chute surface, through the spacings of the flexible members and adjacent the roll surface to guide, pneumatically and mechanically, the leading edge of the strip into threadup position with respect to the windup roll and into contact with the surface of such windup roll; connecting the leading edge of the strip to the windup roll; pulling the strip from the transport tube or tubes through a slot therein and into a third path defined by process rolls; expanding the strip to form the full width web; moving the full width web in the third path; and, winding such web onto the windup roll.

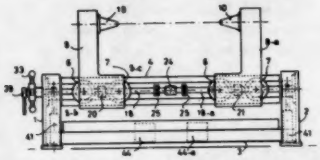
Apparatus is provided for performing the above described method.

3,743,198

APPARATUS FOR HANDLING ROLLS OF STRIP MATERIAL FOR UNROLLING THEREOF

Raymond L. R. Lucas, c/o Off. Tech., 133 Bis rue Mouneyra, Bordeaux, (Gironde), France

Filed Oct. 13, 1971, Ser. No. 188,980
Int. Cl. B65h *19/30*
U.S. Cl. 242—58.6 **5 Claims**



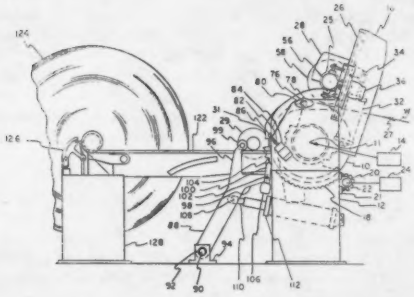
The invention relates to an apparatus for handling large rolls of paper or other strip or continuous sheet material and comprises a frame having two pairs of arms mounted thereon, the arms of each pair being independently movable toward and away from each other on an associated support beam to accommodate a roll of paper therebetween, and with each of said beams being pivotally mounted so as to be able to cause the pairs of arms carried thereby to be moved to position to engage a roll mounted on the floor and to lift the roll to operating position and to lower an empty roll to the floor.

3,743,199

METHOD AND APPARATUS FOR REELING WEB MATERIAL

Gerald W. Karr; Robert E. Page, both of Beliot, Wis., and Robert D. Safford, Aiken, S.C., assignors to Beloit Corporation, Beloit, Wis.

Filed Sept. 2, 1971, Ser. No. 177,224
Int. Cl. B65h *17/08, 75/28*
U.S. Cl. 242—65 **6 Claims**



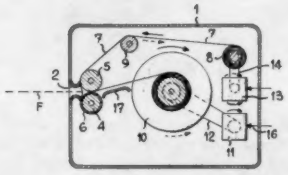
This invention relates to a vacuum reel spool for use on a paper machine reel. The surface of the reel spool is perforated along substantially its entire length and the vacuum produced therein urges the ballooned portion of web formed between a previously wound roll and a new reel spool into the nip between the reel drum and reel spool at high speeds thereby permitting the reel to operate continuously at papermaking speeds.

3,743,200

MAGAZINE FOR BARE FILM SHEETS FOR USE IN X-RAY FILM HANDLING APPARATUS

Michel Hommerin, Paris, France, assignor to Compagnie Generale De Radiologie, Paris, France

Filed July 29, 1971, Ser. No. 167,262
Claims priority, application France, Aug. 4, 1970, 7028679; Apr. 30, 1971, 7115609
Int. Cl. B65h *17/06*
U.S. Cl. 242—67.3 R **10 Claims**



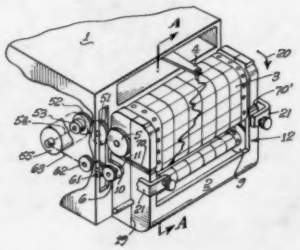
Magazine for storing bare film sheets, for use in X-ray film handling apparatus, comprising a light-tight housing and a slot for introducing or ejecting said sheets, further including within said housing: a motor-driven central storage roller; a motor-driven feed roller, and a plastic flexible band wound respectively around said two rollers. The film sheet introduced in the slot is wound on the central roller and stored between two faces of the band fed from the feed roller. For ejection the feed roller is driven to unwind the band from the central roller and carry the sheet towards the slot.

3,743,201

CASSETTE FOR STRIP CHART RECORDERS

Rocco J. Tarantino, 265 Sandpiper Drive, Palm Beach, Fla., and John O. Yeiser, 24961 Cienega Lane, Mission Viejo, Calif.

Filed June 9, 1971, Ser. No. 151,344
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.3 **9 Claims**



A low-cost chart paper cassette for strip-chart recording instruments. Analogously to film and tape cassettes, the chart cassette contains a roll of chart paper and a takeup spool, and is attachable to a chart recording instrument built to fit it. The box-like housing of the cassette may be made of two havles molded of plastic material, cemented together. The chart paper moves forward across the top of the cassette under the recording stylus, down the front of the cassette, and back inside onto the takeup spool. The chart paper is moved by sprockets which are part of the recording instrument and in-

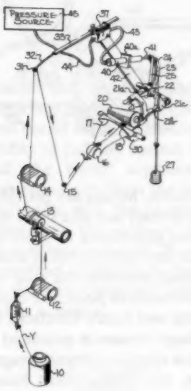
trude into the front of the cassette when it is in place. The takeup spool shaft protrudes from the side of the cassette and carries a gear which meshes with a gear on the instrument. The supply spool shaft may also protrude. When a knob is attached to this shaft, a detached cassette may operate as a chart viewer. For monitoring long records, the paper may be cut externally of the cassette, and allowed to hang down outside. For compact storage of records, the roll may be removed from the cassette. The cassette has a groove, along which it may be separated or broken apart, the portion containing the takeup spool and record being retained for storage.

3,743,202

SPEED AND TENSION CONTROL FOR YARN WINDER

Walter A. Hoffsommer, Ridley, Pa., and Wieslaw J. Bartnicki, New Castle, Del., assignors to Enterprise Machine and Development Corporation, New Castle, Del.

Filed June 14, 1972, Ser. No. 262,655
Int. Cl. B65h *59/38*
U.S. Cl. 242—45 **7 Claims**



The speed control includes a tension sensing element which is positioned in advance of the wind-up package to detect variations in tension of the yarn as it approaches the package. The rotational speed of the wind-up package is varied in response to a variation in tension in the yarn to thereby maintain uniform linear speed in the yarn being wound onto the wind-up package. A drive roll is positioned beneath and rotates the wind-up package by surface contact with the yarn and the wind-up package is normally maintained against the drive roll with a predetermined driving force and the control means operates to reduce the pressure and the driving point of the wind-up package against the drive roll and thereby decrease the rotational speed of the wind-up package in response to any increase in tension in the yarn approaching the wind-up package.

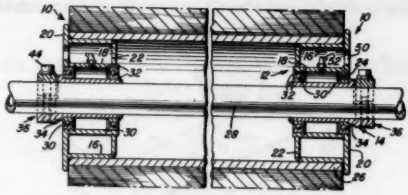
3,743,203

CORE CHUCK

Arthur J. Rancourt, 38 Sanger, Waterville, Maine

Filed Mar. 30, 1971, Ser. No. 129,484
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.4 **6 Claims**

The chuck includes smooth concentric spaced inner and outer cylindrical walls interconnected by annular end plates. One end plate defines an outwardly projecting annular flange for engagement against the end of a roll core. The inner wall receives an elongated sleeve bearing mounted therein for rotation of the shell thereabout. The sleeve includes a clamping head for a locking thereof to a roll supporting shaft. Handling



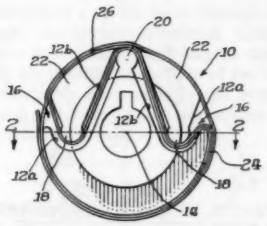
holes are provided through the outermost plate which holes are enable easy access to an internal grease fitting.

3,743,204

CORE MICROFILM

Heinz E. Hertel, Mount Prospect, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 1, 1971, Ser. No. 194,251
Int. Cl. B65h *75/02, 75/28*
U.S. Cl. 242—68.5 **11 Claims**



A film anchoring core for a rotatable film spool, cartridge, or the like, to anchor the core terminal portion of the film. The core has a W-shaped film end anchoring groove with the ends of the outer leg portions of the W-shaped groove opening through the perimeter of the core generally on opposite sides of the core to permit threading film onto the spool and locking the film to the core from either side thereof. The W-shaped groove has a third opening through the perimeter of the core at the juncture of the inner leg portions of the groove. The portions of the core between the outer and inner leg portions of the W-shaped groove define a pair of snubber posts about which a terminal loop of film engaged in the groove is adapted to be anchored to permit threading and locking of the film from either side of the spool. Portions of the core at the junctures of the inner and outer legs of the groove and at the juncture of the inner legs of the spool define snubber shoulders for the film.

3,743,205

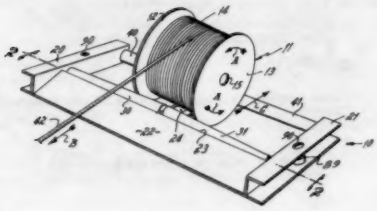
SELF-CENTERING REEL SUPPORT

Richard Misrach, Hallendale, Fla., assignor to Reel/Jack, Inc., Miami, Fla.

Filed Jan. 26, 1972, Ser. No. 220,955
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.7 **16 Claims**

A self-centering reel support has at least a front roller and a rear roller supported between appropriate frame members. The front roller has integral surfaces positioned so as to cooperate with the back roller to center a supported reel against excessive axial translation when strip material is paid off the reel. The front roller may comprise a set of two rollers

which may be cylindrical or tapered and which are positioned, with respect to the back roller, so as to center a supported



reel. A typical reel includes a core supporting a strip material wound thereon and two parallel coaxial rims, each having a circular periphery.

3,743,206

DEVICE FOR UNWINDING AND WINDING WEBS OF MATERIAL FROM OR ON TO SPOOLS

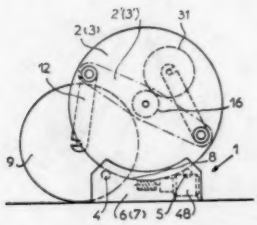
Paul Charles Riegger, 7, rue Ehrmann, Strasbourg (Bas-Rhin), France

Filed July 9, 1971, Ser. No. 161,247

Claims priority, application France, July 16, 1970, 7026930

Int. Cl. B65h *17/14*

U.S. Cl. 242—75.1 **6 Claims**



A device for the unwinding and winding of webs of material in spools at one or more winding and unwinding stations carried by the end of one or more fore-arms articulated on a pivotable arm or circular plate, characterised in that it comprises in combination at least one drive means disposed or driven in the pivot axis of the arm or plate, this being a roller driven so as to possess a peripheral speed approaching the linear speed of the web in the machine supplied by the spool being unwound or wound, the latter being pressed at the desired moment upon the drive means which thus imparts its peripheral speed to it, for the purpose of braking in the case of unwinding or drive in the case of winding, and at least one bearing, preferably retractable, disposed at the end of each fore-arm to take up the spool by its hollow centre, with or without shaft, for on the one hand its raising and unwinding and on the other hand its winding and discharge.

3,743,207

SPINNING REEL WITH CONTROLLABLY ROTATABLE BAIL

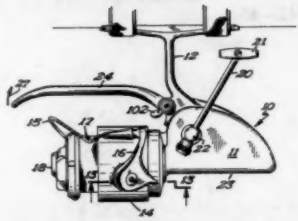
Robert L. McMickle, 3628 Cliffsite Drive, Palo Verde Peninsula, Calif.

Filed Dec. 15, 1971, Ser. No. 208,177

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.21 A **14 Claims**

A spinning reel structure of the open-face type which includes means for automatically changing the operational mode from line retrieval mode to line dispensing mode, and vice versa. The spinning reel structure includes frame means, a line bail for controlling the line, with a centrally disposed spindle shaft mounted on the frame, the spindle shaft having means for retaining and supporting a line spool along the outer end portion thereof. In use, a line spool is mounted on the spindle shaft, and means are provided for actuating the reel, including the line bail, to retrieve the line onto the line spool. The spinning reel structure further includes a spool cap mounted for rotation upon the frame, the spool cap having a shroud portion which is normally disposed radially outwardly of the spindle shaft, and which at least partially encloses the line spool mounted upon the spindle shaft. Drive means are provided for rotating the spool cap and for simultaneously reciprocatorily moving the spindle shaft along the axis of the spool cap, with the line bail means being operatively coupled to the spool cap. For accomplishing change-over of operational modes, the bail includes hinge means for controllably moving the bail from a stable line retrieving disposition to a stable line dispensing disposition, with over center biasing means being provided to retain the line bail in one or the other



of its stable dispositions. Means are provided for controllably retracting the spindle shaft and line spool inwardly beyond the normal inner winding disposition in order to engage a bail actuating linkage. The line bail further is arranged to be held at an intermediate point between the two operational modes, and while at the intermediate point, the bail interferes with the dispensing of the line and hence functions as a line gripper. A lever or other linkage means is provided for retracting the spindle shaft and line spool, to thereby engage the line bail actuating mechanism, the arrangement being such that upon retraction of the line spool with the lever, the bail is automatically moved from line retrieving disposition to line dispensing disposition. While in either operational mode, actuation of the lever controllably moves the bail to an intermediate line gripping disposition for controlling line dispensing. The bail is automatically returned to line retrieving disposition upon rotation of the spool cap.

3,743,208

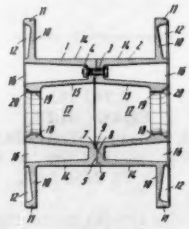
REEL CONSTRUCTION

Willi Schmitz, Andernach, Rhine, Germany, assignor to Mittelrheinische Metallgiesserei H. Beyer KG, Andernach, Germany

Filed June 1, 1971, Ser. No. 148,446

Int. Cl. B65h *75/14*

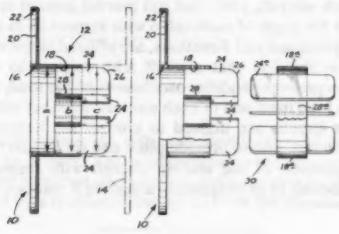
U.S. Cl. 242—118.6 **4 Claims**



A reel for cables and the like is composed of two reel sections each having a hub portion and a flange portion. Bolts or similar means connect the reel sections so that the respective

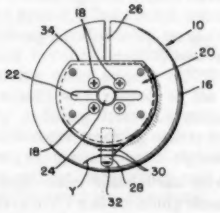
hub portions abut one another in axially aligned relationship with the flange portions being axially spaced from one another.

3,743,209
KNOCKDOWN REEL
George C. Anderson, 2425 S.E. Moores St., Portland, Oreg.
Continuation-in-part of Ser. No. 22,592, March 25, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,080
Int. Cl. B65h 75/14
U.S. Cl. 242—118.61 8 Claims



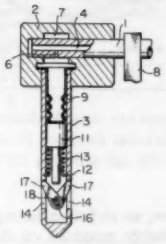
A knockdown reel for winding and unwinding strand material is formed in two interfitting parts. Each part includes a hollow cylindrical barrel segment having a radial head on its outer end. A plurality of radially spaced fingers are mounted on the inside of the barrel segment extending axially therefrom in a direction away from the head. The two barrel segments are interfittable with the fingers of each projecting into the other, and with the ends of the barrel segments abutting to form a continuous barrel. The two parts are maintained in their assembled condition by frictional engagement of the fingers with the barrel segment inner surfaces, by welding, or by means of an adhesive.

3,743,210
SPOOL
John B. Hawley, Jamestown, N.C., assignor to Akron Spool and Manufacturing Co., High Point, N.C.
Filed Jan. 11, 1971, Ser. No. 105,178
Int. Cl. B65h 75/28
U.S. Cl. 242—125.1 7 Claims



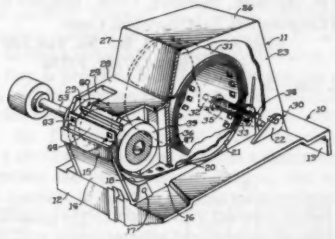
A spool including a barrel having a flange at each axial end is provided with a yarn end retainer. The yarn end retainer comprises a plate secured to one spool flange adapted to have at least a partial yarn convolution wrapped thereabout and a catch member which cooperates with means on the flange for retaining the yarn tail in selected positions. The flange is provided with a radial slot having a base, the inner end of which is flush with the barrel periphery such that the yarn can be directed from the catch member, around the plate and through the flange slot directly to the barrel periphery for winding thereon.

3,743,211
PNEUMATIC BOBBIN HANGER
Hajimu Imai, Higashiyama-ku, Kyoto, and Burou Suganuma, Otokuni-gun, Kyoto, both of Japan, assignors to Murata Machinery, Ltd., Kyoto and Kanebo Ltd., Tokyo, Japan
Filed June 19, 1972, Ser. No. 264,383
Int. Cl. B65h 49/02; D03j 5/08
U.S. Cl. 242—130.2 8 Claims



Inflation of a bellows encased within a main cylindrical body caused by timed introduction of compressed air pushes down a slider overcoming a spring force and the lower end of the slider forces a pair of swingable pawls to move to the open disposition overcoming a spring force through vertical slots formed through the main cylindrical body shell. A downwardly open hood-shaped skirt may be disposed to the cylindrical body for reliable registration of the hanger at the bobbin and undesirable co-rotation of the bobbin with the spindle at the time of bobbin-spindle engagement is prevented by a frictional member disposed to the skirt.

3,743,212
FILM RETENTION MEANS FOR FILM CARTRIDGES
Bruno Michaels, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed July 16, 1971, Ser. No. 163,155
Int. Cl. G03b 1/04; G11b 15/32, 23/04
U.S. Cl. 242—197 8 Claims

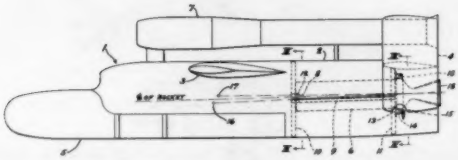


A film cartridge for a projector has a means for retaining the free end of a film in engagement with a driving sprocket for conveniently feeding the film from the cartridge. The retaining means includes a biased arcuate plate member for resisting film being fed into the cartridge and a film guide rail cooperating with the plate member to hold the free end of the film in engagement with the sprocket teeth in a manner to permit the film to be fed out of the cartridge when turning the sprocket in one direction and to permit the film to alternatively disengage and engage the sprocket teeth when turning the sprocket in the opposite direction.

3,743,213
GUIDED MISSILES

Donald R. Suchner, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Feb. 19, 1952, Ser. No. 272,464
Int. Cl. F42b *15/02, 15/18, 15/00*
U.S. Cl. 244—3.1 **6 Claims**

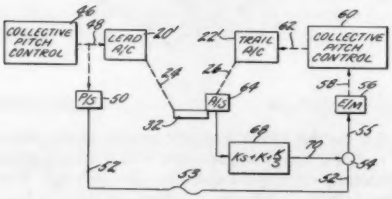


3. In combination, an airframe having a fuselage and wings, a jet motor detachably mounted on the fuselage in substantially parallel relation thereto, the airframe having one center of gravity with the motor mounted thereon and a second center of gravity with the motor detached therefrom, a booster rocket disposed within and substantially parallel with said fuselage, a pair of rocket supporting tracks having their upper surface below the rocket center and adapted to support the rocket in one position or in a second position wherein the rocket is turned 180° about its longitudinal axis, driving lugs extending diametrically and transversely from the front end of the rocket and resting on said tracks, thrust abutment means on the fuselage for said driving lugs, a pair of vertically extending lugs on the rocket near the rocket rear portion, means on the fuselage for sideways holding said vertical lugs, latch means for longitudinally holding the rocket in place, and a rearwardly extending exhaust nozzle on the rocket, said nozzle being canted from the longitudinal center line of the rocket so that the nozzle center line in one position passes through one of said centers of gravity and when the rocket is turned 180° about its longitudinal center line the nozzle center passes through the other one of said centers of gravity.

3,743,214
DIRECT LIFT, DRAG AND HEADING IMPROVEMENT FOR MULTI-LIFT AIRCRAFT CONTROL SYSTEM

Joseph R. Maciolek, Newtown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 2, 1971, Ser. No. 168,200
Int. Cl. B64c *37/02, 27/70*
U.S. Cl. 244—2 **5 Claims**

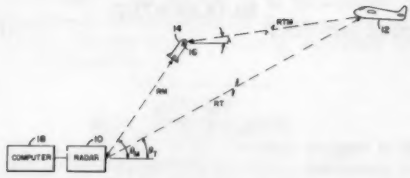


A single load is suspended from vertical cables extending beneath each of two direct lift type of aircraft, the cables being separated by a spreader bar. A trailing, slave aircraft flys behind, above, and to one side of a leading, master aircraft, with the spreader bar extending at an angle to the heading of the aircraft, in a plane below them. The lead pilot control provides overall, or outer loop control of the lead aircraft, and the controls of the lead aircraft are electromechanically coupled to operate the controls of the trailing aircraft, whereby the lead pilot controls the outer loop of both aircraft. The inner or stability loop of the controls of each aircraft are modified so as to utilize inputs from the inertial system of the related aircraft and inputs relating to the manner in which the load extends below the aircraft, to both stabilize the load with respect to each aircraft, and to maintain the trail aircraft in a proper position with respect to the lead aircraft and the load. Specifically, the cables from each aircraft supporting the spreader bar are maintained substantially perpendicular with respect to the spreader bar thereby to maintain substantially equal loading of each aircraft; pitch and roll inertial sensors in each aircraft, and the angle of each cable with respect to its aircraft in both the pitch and roll directions, are utilized in the respective aircraft to stabilize that aircraft with respect to the load, thereby to prevent pendular oscillations of the load; the heading of the load itself and of each aircraft, together with desired formation inputs, are utilized to control the heading of the trailing aircraft, and to provide pitch and roll inputs to control relative position of the trailing aircraft with respect to the leading aircraft so as to maintain a desired formation in flight.

3,743,215
SWITCHING SYSTEM AND METHOD FOR MISSILE GUIDANCE CONTROL IN A TVM SYSTEM

J. L. Harris, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1971, Ser. No. 174,917
Int. Cl. F41g *7/14, 9/00, 11/00*
U.S. Cl. 244—3.14 **5 Claims**

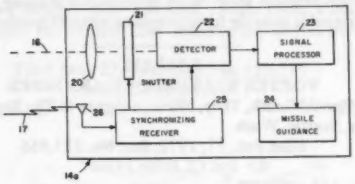


In switching from earth-based radar data to missile-borne radar data for missile guidance in a TVM system the data from each radar receiver is compared to determine when switching of the guidance control is most feasible. In target-via-missile (TVM) guidance, data from an earth-based radar is used to guide an interceptor missile part of the way to a target, then data from a radar receiver on board the interceptor missile is used to guide the interceptor for the remainder of the flight. The missile-borne sensor receives a signal which is transmitted by earth-based radar and reflected by the target. This signal is processed to yield data proportional to the pointing error of the missile-borne tracking antenna. The pointing error data from the missile-borne radar is transmitted to a system computer and therein processed to yield the desired guidance information.

3,743,216
HOMING MISSILE SYSTEM USING LASER ILLUMINATOR

David J. Salonimer, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 9, 1969, Ser. No. 790,516
Int. Cl. F41g 7/18; F42b 15/02; F41g 9/00
U.S. Cl. 244--3.16 2 Claims

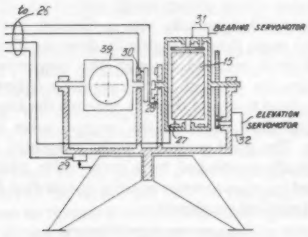


A missile homes on reflected illumination of targets illuminated by a laser. The missile includes means energizible to detect the reflected illumination, with the means periodically energized by a synchronizing signal from the illuminator.

3,743,217
INFRARED CONTROL SYSTEM FOR MISSILE TELEGUIDING

Jean Paul Turck, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Oct. 15, 1971, Ser. No. 189,656
Claims priority, application France, Oct. 22, 1970, 7038163
Int. Cl. F42b 7/00, 15/10, 7/18
U.S. Cl. 244—3.16 3 Claims



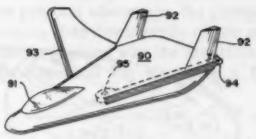
A missile guidance system using a laser beam and comprising, in a ground station, optical means having an optical axis for aiming at said device; a laser beam transmitter and a laser beam receiver having parallel axes, means for measuring the angular difference between said optical and parallel axes, means for measuring other angular differences defining the position of the missile with respect to the transmitted laser beam; means for deducing from the measurement of first-named angular difference tracking orders for the missile; and means for deriving navigation control signals from all said angular differences and for transmitting said control signals to said missile via said transmitted laser beam.

3,743,218
SEMI-RIGID AIRFOIL FOR AIRBORNE VEHICLES

Thomas E. Sweeney, Princeton, N.J.; Philip M. Condit, Mercer Island, Wash.; Robert A. Ormiston, Mountainview, Calif., and Walter Barry Nixon, Trenton, N.J., assignors to Thomas E. Sweeney, Princeton, N.J.

Division of Ser. No. 740,895, June 28, 1968, Pat. No. 3,599,904. This application May 19, 1971, Ser. No. 144,861
Int. Cl. B64c 1/00, 3/56
U.S. Cl. 244—36 5 Claims

The present invention relates to a semi-rigid airfoil for use with airborne vehicles and capable of being folded and/or warped. The airfoil includes a rigid spar defining a leading edge and a cable defining the trailing edge with the root end thereof secured to the fuselage of the vehicle and the other end to a tip truss structure, with a flexible material forming top

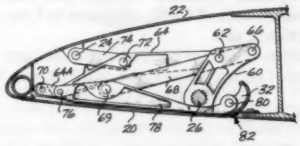


and bottom airfoil surfaces. Means are also provided for twisting portions of the airfoil about an axis extending through the root end, and means for pivoting the spar to fold against the fuselage.

3,743,219
HIGH LIFT LEADING EDGE DEVICE

Friedrich J. Gorges, Dietzenbach-Steinberg, Germany, assignor to The Boeing Company, Seattle, Wash.

Filed June 30, 1971, Ser. No. 175,987
Int. Cl. B64c 3/28
U.S. Cl. 244—42 CA 6 Claims

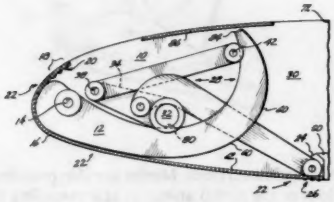


The retractable leading edge wing flap has a skin surface with tapered thickness in order that it can more easily assume the desired nonuniform degree of curvature when the flap is in its extended position. Through the inherent resiliency of the flap skin surface material in combination with an actuating mechanism having a minimum of operating elements, the surface of the flap is provided with a variable contour thereby producing a variable camber to the flap panel and likewise to the wing airfoil section that is in combination therewith. More specifically, the flap extension and retraction mechanism operates in a chordwise plane and requires a maximum of five links to produce the desired result. Further, the actuating mechanism operates to position the flap panel relative to the fixed wing leading edge so as to vary the wing airfoil section aerodynamic flow characteristics by changing the total overall amount of effective wing camber. For the landing condition, the arrangement of the linkage mechanism produces an angular relationship of the flap chord plane relative to the wing chord plane such that the overall aerodynamic affect is a greater airfoil section camber at said landing condition than at the take off condition. Also, the arrangement of the linkage mechanism for the landing condition is such that the leading edge wing flap is extended further forward from the relatively fixed leading edge of the main wing section in addition to being spaced away from the wing leading edge, to form an aerodynamic slot; whereas, at the take off position the movable flap section and wing leading edge are in abutment relation thereby forming a substantially continuous upper surface without the slot.

3,743,220
LEADING EDGE FLAP MECHANISM

William E. Stinson, Mercer Island, Wash., assignor to Steinson Aircraft, Inc., Renton, Wash.

Filed Oct. 26, 1971, Ser. No. 192,466
Int. Cl. B64c 21/08
U.S. Cl. 244—42 CA 7 Claims

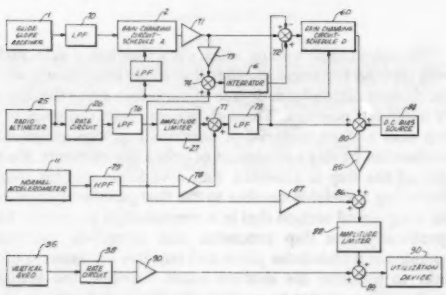


An aircraft airfoil leading edge flap mechanism utilizing a pivotally mounted forming rib in combination with a portion of the airfoil skin having resilient characteristics. Extension of the rib by rotation about its pivotal mounting means deforms the resilient skin portion over the forming rib into a desired highly cambered, high lift, low speed airfoil curvature having increased area, camber and chord for landings and take-offs. An always smooth and uninterrupted airfoil nose section surface will be maintained at the retracted position during the extending or retracting movement and at the extended leading edge position.

3,743,221
AIRCRAFT FLIGHT CONTROL APPARATUS

Lowell O. Lykken, Westlake Village, and Naren M. Shah, Santa Monica, both of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 835,528, June 23, 1969, abandoned. This application Apr. 9, 1970, Ser. No. 26,890
Int. Cl. B64c 13/18, 13/44
U.S. Cl. 244—77 A 23 Claims

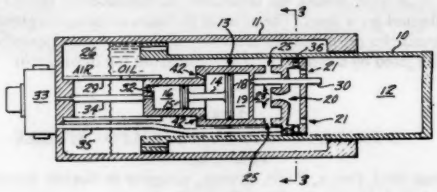


Apparatus for generating a command signal to control an aircraft in the vertical direction. A signal representative of the desired rate of descent of the aircraft is combined with a signal representative of the actual rate of descent. The latter signal is derived from a source that accurately represents the rate of descent at high altitude, e.g., the integrated output of a normal accelerometer or the differentiated output of a barometric altimeter, and a source that accurately represents the rate of descent at low altitude, e.g., the differentiated output of a radio altimeter. At high altitude, the first source is used; at low altitude, the second source is used; and at intermediate altitude, a decreasing percentage of the signal from the first source is blended with an increasing percentage of the signal from the second source. In one embodiment, the signals from the two sources are complementarily blended by means of a single gain changing circuit. The difference between the two signals is applied to the input of the gain changing circuit and the output signal of the gain changing circuit is added to one of the signals. In another embodiment, the integrator that operates on the glide slope error is used to derive from a normal accelerometer the signal representative of the actual rate of descent at high altitude and the gain changing circuit that controls the flare profile is used to blend the signals from the two sources. In forming the command signal to control the aircraft elevator, a vertical acceleration term is employed instead of a pitch attitude term. With appropriate shaping, this command signal is suitable for controlling aircraft spoilers as well.

3,743,222
VORTEX VALVE SHOCK ABSORBER

David Harold Smith, Troy, Mich., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 17, 1972, Ser. No. 227,066
Int. Cl. B64c 25/60
U.S. Cl. 244—104 FP 8 Claims

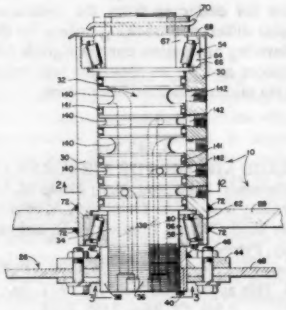


A linear piston type, fluid damped, adaptive shock absorber for an aircraft landing gear strut having an automatically adjustable orifice through the piston. The impedance to the flow of damping fluid through the orifice is controlled by a fluidic vortex valve which utilizes small control jets of high pressure fluid injected tangentially into a circular chamber through which the main flow of hydraulic damping fluid passes. The force of fluid injected through the tangential control jets determines the strength of the swirling action of the main damping fluid flow and thereby controls the impedance to the main fluid flow through the vortex valve and the fluid chamber. The fluid pressure to the tangential control jets is automatically controlled by a servo valve which is, in turn, controlled by an automatic sensing system that determines the aircraft's vertical acceleration.

3,743,223
HYDRAULIC TURNTABLE

Francis T. Spellman, Jr., Blue Springs, Mo., assignor to Symons Corporation, Des Plaines, Ill.

Filed Sept. 20, 1971, Ser. No. 182,048
Int. Cl. B66c 23/84
U.S. Cl. 248—2 2 Claims



A hydraulically-powered turntable including a fixed multiple channel oil feed mounting spool which functions as an axle

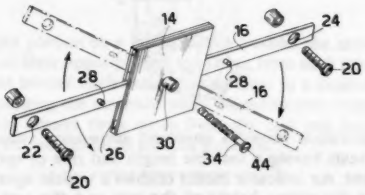
for a rotary spool housing, the latter serving both as a turntable hub and a manifold for distributing oil in the performance of various hydraulic functions which are associated with the turntable as a whole. A worm drive for the turntable hub embodies a spring helix and worm wheel which, together with certain hub-stabilizing devices, operate in a pool of lubricating oil.

3,743,224

TYPEWRITER SWIVEL LOCK MOUNT

M. Leonard Singer, 1500 Cardinal Drive, Little Falls, N.J., and Robert M. Woletz, 294 Buttonwood Drive, Paramus, N.J.

Filed June 23, 1971, Ser. No. 155,717
Int. Cl. F16m 13/00
U.S. Cl. 248—23 8 Claims



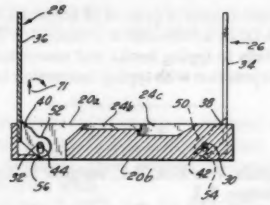
A swivel lock mount particularly for mounting an operating device,such as a typewriter on a stand in a position such that it cannot be stolen but so that it can be moved backwardly and forwardly, includes a transversely extending lock bar which has openings therethrough through which securing bolts are passed and engaged into the bottom of a carriage of the device to be secured. The lock bars extend through a guide plate having a through slot through which the bar extends. The slot has great transverse and longitudinal dimensions in order to permit the bar to be slid backwardly and forwardly and to and fro for the purpose of positioning the article in any desired operating position in respect to the guide plate. The guide plate is secured to a mounting stand by engagement of a bolt which extends through the mounting stand and is threaded into the plate. A feature of the construction is that the bolt may be enclosed at its underside and by a lock mechanism which engages over the head of the bolt or a nut therefor and which prevents contact of the nut or the bolt for the purpose of disengaging it from its threaded connection to the guide plate so that, once the device is positioned on a mounting stand, it can only be removed by unlocking the locking mechanism.

3,743,225

CASKET FLORAL SPRAY HOLDER

Edmund J. Bochinski, 2379 Corbin Avenue, New Briton, Conn.

Filed May 5, 1971, Ser. No. 140,491
Int. Cl. A47g 7/00
U.S. Cl. 248—27.8 3 Claims



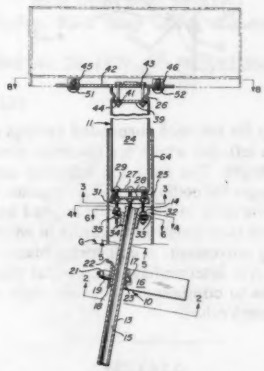
A floral spray holder for mounting on the head panel of caskets wherein the holder includes a support block for mounting on the head panel and a pair of prongs pivotly mounted on the support block. The prongs are adapted to engage a block of styrene material supporting a floral spray to prevent the floral spray from falling off the casket. The prongs have elongated apertures with pivot pins fixedly mounted on the block disposed in the apertures. Each of the prongs has a cam surface engageable with and slideable on an adjacent shoulder portion of the support block. The prongs have notches formed therein adjacent to cam surfaces which are engageable with the shoulder portions when the prongs are rotated to the open position whereupon the prongs guided by the elongated apertures slide downwardly on the pivot pins so that the notch becomes engaged with the shoulders to lock the prongs in the open position for mounting a floral spray thereon.

3,743,226

POST ASSEMBLY

Don W. Seiling, 1516 Gummer Avenue, Dayton, Ohio

Filed May 8, 1970, Ser. No. 35,811
Int. Cl. F16m 11/12
U.S. Cl. 248—156 6 Claims



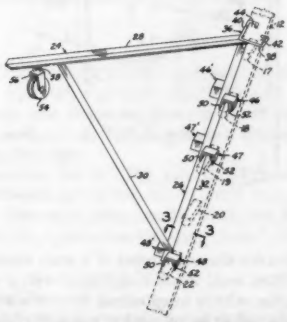
Apparatus for mounting rural mail boxes and like applications having a two part construction. It includes an anchor segment for driving into the ground and an adjustable above the ground support segment. The assembly features a uniquely contrived anchor device and a joint which permits the ready installation of the entire assembly and a quick and easy adjustment or readjustment of the attitude and relative positioning of the support segment.

3,743,227

LADDER SUPPORTED HOIST

Jack S. Sowery, 927 West Main, Troy, Ohio

Filed Aug. 16, 1971, Ser. No. 171,823
Int. Cl. E06c 7/12
U.S. Cl. 248—210 1 Claim



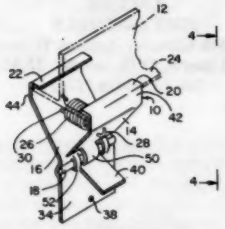
An elongated ladder engaging standard is connected in angular relation to one end to one end of an arm and a brace in-

terconnected with the other end portions of the standard and arm, forms an A-frame hoist. Socket means on the standard releasably engage ladder rungs in hoist supporting relation. Tackle means on the outwardly projecting end of the arm completes the hoist.

3,743,228
HANGER CLIP FOR SUSPENDED CEILINGS

Edward A. Drab, 344 East Tenth Avenue, Conshohocken, Pa.

Filed May 10, 1971, Ser. No. 150,868
Int. Cl. F21s *1/02*
U.S. Cl. 248—228 3 Claims

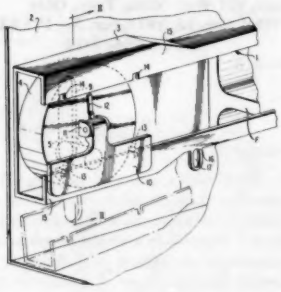


A hanger clip for use with suspended ceilings comprising a right arm and a left arm which are pivotally connected intermediate their length. The right and left arms each terminate upwardly in flanges for ceiling gripping purposes. The left arm terminates downwardly in a vertically aligned hanger portion and the right arm terminates downwardly in an operating arm for clip opening movement. A coil spring biases between the right and left arms intermediate the pivotal connection and the flanged ends to continuously bias the right and left arm flanges toward each other.

3,743,229
ADJUSTING ARRANGEMENT FOR A SEAT

Werner Breitschwerdt, Stuttgart; Gunter Gmelner, Sindelfingen, and Christian Grabner, Maichingen, all of Germany, assignors to Daimler-Benz Aktiengesellshaft, Stuttgart-Unterturkheim, Germany

Filed June 22, 1971, Ser. No. 155,489
Claims priority, application Germany, June 23, 1970, P 20 30 807.0
Int. Cl. F16m *11/24*
U.S. Cl. 248—394 36 Claims

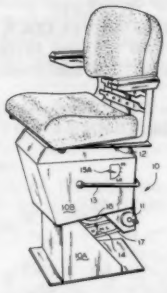


An installation for the adjustment of a seat, especially of a motor vehicle front seat, which is equipped with a seat frame displaceable in the vehicle longitudinal direction within guide rails that are adapted to be secured at a lateral plate whereby the guide rails are so secured, preferably at one or both ends, as to be adjustable in height.

3,743,230
VEHICLE SEAT SUSPENSION SYSTEM WITH HEIGHT AND RIDE INDICATOR

Gerald Freedman, Evanston, Ill., assignor to Freedman Seating Company, Evanston, Ill.

Filed Dec. 14, 1970, Ser. No. 97,551
Int. Cl. B60n *1/02*
U.S. Cl. 248—399 10 Claims

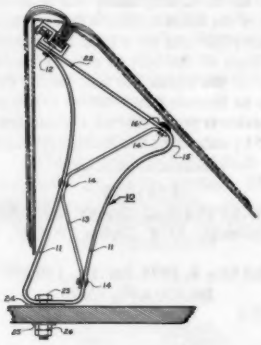


The invention provides improved suspension systems for vehicle seats having a variable height and ride or spring arrangement. An indicator means enables a vehicle operator to preadjust the riding height of the seat and the seat spring suspension rates before he sits in the seat. Also, the system enables the driver to change both the height and the suspension rate while he is in the vehicle, despite any preadjustments which he may have made.

3,743,231
COPY HOLDERS

Donald E. Whyte, 6507 Firewood Drive, Vancouver, Wash.

Filed Nov. 9, 1971, Ser. No. 197,006
Int. Cl. B42d *9/00*
U.S. Cl. 248—452 8 Claims



This invention relates in general to holding a book or similar copy of material in a convenient position for the reader, and relates especially to typing books and associated copy materials used in conjunction with typing instruction in classrooms.

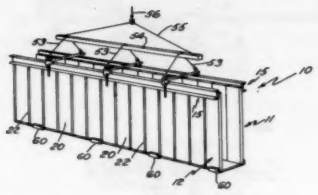
3,743,232
CONCRETE FORM

Hugh J. Vaughan, Warwick, R.I., assignor to Bowerman Bros., Inc., Providence, R.I.

Filed July 12, 1971, Ser. No. 161,780
Int. Cl. E04g *11/06*
U.S. Cl. 249—34 5 Claims

A form for casting concrete which has a pair of spaced walls formed of panels arranged in multiples along each side wall of

the form, the panels of each side being attached together in edge to edge relation so that a large unit is formed with the opposite gangs of panels also so arranged that both of the spaced gangs may be lifted at one time by a crane to be moved from one location to another. The walls are connected together at



their upper portion by a means which enables the moving of the walls at their upper portion toward or from each other, the movement toward each other placing them in a desired position for pouring the concrete while the movement away from each other breaks them away from the cast and hardened concrete for movement to another location.

3,743,233

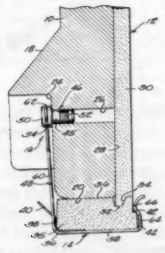
HANGER CLIP ASSEMBLY FOR A HOT TOP

Anthony J. Varrati, Oak Creek, Wis., assignor to Thiem Corporation, Milwaukee, Wis.

Continuation of Ser. No. 862,871, Oct. 1, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,185

Int. Cl. B22d 7/10

U.S. Cl. 249—202 **1 Claim**



A hanger clip assembly for a hot top including a casing having a skirt around its outer periphery and a number of holes through the casing terminating in recesses provided in the skirt, an insulating lining on the inner surface of the casing and an insulating bottom ring on the bottom of the casing, the assembly including a plug having a shank which is inserted into each of the holes in the casing and a cap seated on the outer surface of the casing and a wire clip attached at one end to the cap and at the other end to the inner periphery of the bottom ring.

3,743,234

ICE TRAY GRID WITH COMBINED CAMMING HANDLE AND DETACHABLE ICE TONG TOOL

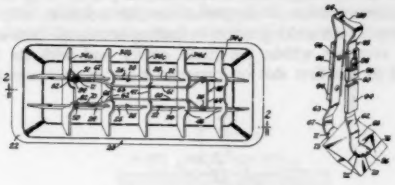
Joe P. Pietrzak, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 7, 1971, Ser. No. 150,382

Int. Cl. B28b 7/10

U.S. Cl. 249—203 **3 Claims**

This invention relates to ice tray grids having a combined camming handle and ice tong tool adapted to be detachably applied thereto. The tool performs an ice release camming handle function when used in combination with an ice tray grid to provide sequential release for the ice cubes while also



performing as resiliently deflectable ice tongs that may be readily removed from the grid for use in an ice piece serving operation.

3,743,235

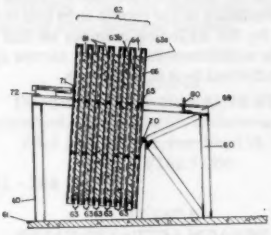
APPARATUS FOR FABRICATING UNITS OF MOLDABLE BUILDING MATERIAL

Shelley W. Shelley, 55-B Pine Grove, Condominium, Isla Verde, P.R.

Filed Dec. 24, 1970, Ser. No. 101,306

Int. Cl. B28b 7/08

U.S. Cl. 249—121 **4 Claims**



Precast units of a moldable building material, such as concrete, are prepared by pouring the material into molds of the desired geometric configuration which are disposed at an angle greater than zero degrees but less than 90° from the horizontal. The precast units may be reinforced and insulated. Pouring of the building material into molds disposed at an angle between the horizontal and vertical position results in finished precast units of building material which are of substantially uniform composition and properties and which do not require hand or machine surface finishing. The molds are typically disposed at an angle of 20° to 70° above the horizontal and preferably at an angle of 30° to 60° above the horizontal. This angle is measured between the horizontal and a suitable dimension of the mold, such as, for example, the axis of a cylindrical mold or the plane of a panel mold.

3,743,236

APPARATUS FOR MOLDING UNDERCUT SLOTS IN MOTOR VEHICLE BODY PARTS

Kurt Schwenk, and Hermann Hablitzel, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Division of Ser. No. 105,799, Jan. 12, 1971, which is a continuation-in-part of Ser. No. 773,409, Nov. 5, 1968, abandoned. This application Jan. 28, 1972, Ser. No. 221,627

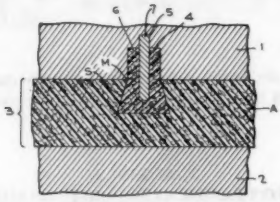
Claims priority, application Germany, Nov. 7, 1967, P 17 04 372.0

Int. Cl. B29c 1/12

U.S. Cl. 249—150 **2 Claims**

In a mold comprising separable mold parts, one of the mold parts is formed with an elongated first slot opening into the mold cavity and a similarly elongated second slot in the bottom of the first slot and of narrower width than the first slot. A

substantially hard non-deformable stiffening member is removably held in the second slot with a free edge projecting into the mold cavity, and a deformable profile strip of U-shaped cross-section is supported on this member with its closed maximum width portion extending across the free edge of said member within the mold cavity and with its legs received in the first slot on opposite sides of said member.



When an article is then formed in the mold cavity and stripped from the mold, it withdraws both profile strip and the stiffening member from the respective slots, whereupon removal of the stiffening member from the deformable profile strip allows substantial deformability of the profile strip into the space formerly occupied by the stiffening member so that the profile strip may then be withdrawn through the narrow open side of the undercut slot formed by it in the article.

3,743,237

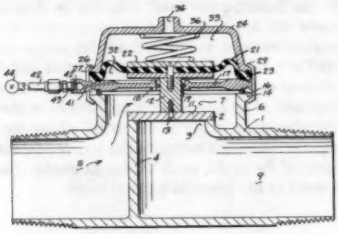
DIAPHRAGM ACTUATED VALVE

Elmer P. Kiser, 1531 Main St., Napa, Calif.

Filed Dec. 30, 1971, Ser. No. 214,080

Int. Cl. F16k *31/145*

U.S. Cl. 251—25 **2 Claims**



A valve on a valve seat so located that the valve under pressure bears on the valve to keep it on the valve seat; the space above the valve has a solid divider and a dome forming an air chamber above the divider; the space in the dome being separated by a diaphragm which is connected to the valve by a valve stem slideable through the middle of the divider; a passage through the divider conducts air under pressure between the divider and the diaphragm to fill the chamber under the diaphragm and lift the diaphragm thereby to open the valve; the same passage functions as a vent when the valve is closed with the assistance of a spring in the dome above the diaphragm; the air in the hose connected to the passage in the divider is controlled to alternately admit air under pressure or to vent the air from the space between the diaphragm and the divider.

3,743,238

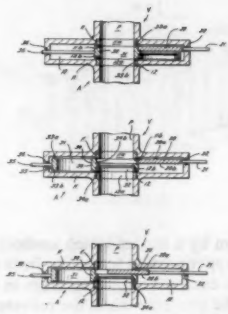
METHOD AND APPARATUS FOR A CONTROL VALVE

John D. Watts, Houston, Tex., assignor to Hydril Company

Filed Nov. 26, 1971, Ser. No. 202,217

Int. Cl. F16k *47/04*

U.S. Cl. 251—118 **13 Claims**



A gate-type flow control valve having a sound suppressing apparatus for converting and absorbing fluid pressure energy in controlling the flow of fluid in the valve by selectively throttling the fluid to a lower pressure.

3,743,239

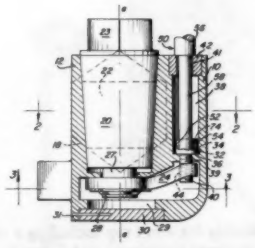
LOCK-OFF VALVE

John R. Heckrotte, Sr., 1625 E. Fairmount, Phoenix, Ariz., and James P. Marcacci, 4041 E. Highland Avenue, Phoenix, Ariz.

Filed Dec. 3, 1971, Ser. No. 204,590

Int. Cl. F16k *35/00*

U.S. Cl. 251—111 **9 Claims**



A lock-off valve has a housing defining a flow path, a valve member arranged in the housing for rotation about an axis of rotation between an open position permitting flow through the flow path and a closed position stopping flow in the flow path, and a locking member mounted for rotation with the valve member about the axis of rotation. The locking member is locked with a relative movement parallel to the axis of rotation to be retained in the closed position.

3,743,240

VALVE ASSEMBLY

Delbert L. Merriner, Glendale, and Woodrow W. Miller, Los Angeles, both of Calif., assignors to Richdel, Inc., Los Angeles, Calif.

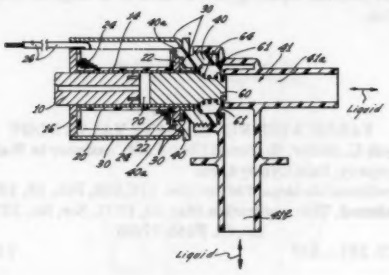
Continuation-in-part of Ser. No. 875,378, Nov. 10, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 118,657

Int. Cl. F16k *31/06*; H01f *7/08*

U.S. Cl. 251—129 **6 Claims**

An improved solenoid valve assembly is provided which is particularly suitable for vending hot liquids, such as coffee,

from a vending machine. The solenoid valve is operated in a self-contained sealed unit, and it is insertable into a valve



housing, for example, by a threaded engagement without the need of tools.

3,743,241

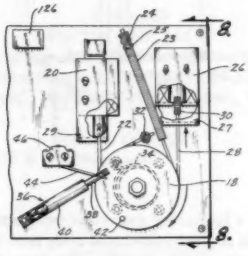
SOLENOID CONTROLLED VALVE SYSTEM

Harold K. Nansel, Waverly, Nebr., assignor to National Crane Corporation, Lancaster County, Nebr.

Filed Apr. 26, 1971, Ser. No. 137,263

Int. Cl. F16k *31/10*

U.S. Cl. 251—138 **5 Claims**



The valve element of a valve is connected to a rotatable drum for incrementally rotating the valve element between open and closed positions. An advance solenoid is connected to a band which embraces the drum such that each time the solenoid is actuated the drum is turned slightly. A second solenoid includes a band extending around the drum such that upon the solenoid being actuated, the drum is locked against return rotation. A return spring engages the drum and a return retard dash pot opposes the return spring. The speed of a power source operating the pump connected to the valve is varied by the drum actuating a speed control switch which increases the speed of the power means. The switches for operating the solenoids are embodied in a pivotal lever by two double throw switches engaging a cross arm on the lower end of the lever and a third switch being in the exposed free end of the lever. The cross arm has oppositely extending portions of different lengths such that when the lever is pivoted the switches will be actuated sequentially.

3,743,242

APPARATUS FOR RETAINING IN ASSEMBLED CONDITION A VALVE FOR USE BETWEEN FLANGES

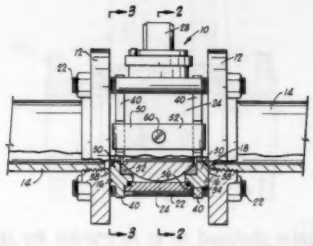
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed May 17, 1971, Ser. No. 144,096

Int. Cl. F16k *5/06*, *51/00*

U.S. Cl. 251—152 **13 Claims**

An apparatus for retaining the two seating or retaining rings of a wafer-type valve in assembled position with the two retaining rings seated in the respective opposite ends of the valve body during handling and shipment of the valve. In one form, the apparatus comprises a clip member having an elongated medial portion with a tab formed on each opposite end thereof. One or more clip members releasably interconnect the respective peripheries of the retaining rings by means of the tabs which engage ribs formed thereon. Screw means is disclosed for securing each clip member to the valve body. A



detent formed on each tab for engaging a mating depression formed in each rib is also disclosed. In another form, the apparatus comprises one or more threaded bolts each extending through a pair of lugs formed on the outer peripheries of the respective retaining rings and interconnecting the retaining rings by means of a nut threaded thereon.

3,743,243

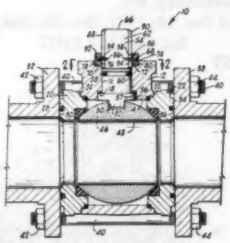
INDEXING STOP OF VALVE STEM

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed July 1, 1971, Ser. No. 158,777

Int. Cl. F16k *51/00*

U.S. Cl. 251—288 **14 Claims**



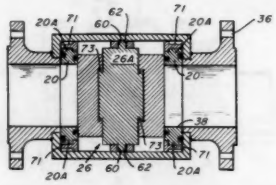
In a conventional valve assembly having a valve body, a valve member disposed in the body, and a rotatable valve stem journaled in the body, and a rotatable valve stem journaled in the body and connected at the inner end thereof to the valve member and extending through the body with the outer end thereof having a pair of parallel flat surfaces formed thereon, an apparatus carried by the body for limiting the rotation of the valve stem so that the valve member will stop at either a fully closed or open position. In one form of the apparatus the outer end of the valve stem extends through an aperture formed in a plate which is seated in a groove formed in the valve body. Diametrically opposed shoulders extend radially inward from the aperture wall to engage the flat surfaces of the stem. In another form, the plate is secured to the valve body by means of two pins extending outwardly from the valve body through matching holes formed in the plate. In yet another form, the plate is combined with a means for providing a seal about the stem. Retaining means and cover means for the apparatus are also disclosed.

3,743,244

TOP AND BOTTOM GATE VALVE FOR REMOVING AND REPLACING RENEWABLE SEATING ELEMENTS

Harvard G. Dickenson, 649 N. Waco, Tulsa, Okla., and Charles R. Hoffman, 6758 S. 72nd E. Avenue, Tulsa, Okla.

Filed Nov. 9, 1971, Ser. No. 196,980
Int. Cl. F16k 3/18
U.S. Cl. 251—197 **8 Claims**



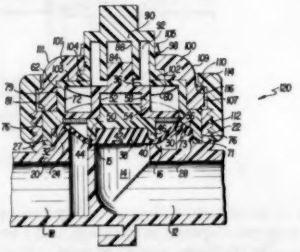
A gate valve designed so as to provide for removal and replacement of renewable seat elements without necessitating the disconnection of the valve body from piping or other associated equipment, this desirable feature made possible through openings in both the top and bottom portions of the valve body and the use of removable seating elements supported in a valve body having annular seating surfaces which encircle the fluid passageway through the body, a vertically positionable gate member which may be positioned in the valve body between opened and closed positions, when in the closed position the gate member contacting the seat element seating surface, and sealable, removable upper and lower cover plates which, when either is removed, will allow the removal and replacement of the renewable seating elements.

3,743,245

ROTARY CAM AXIALLY ACTUATED DIAPHRAGM VALVE

Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1971, Ser. No. 206,702
Int. Cl. F16k 31/52
U.S. Cl. 251—257 **1 Claim**



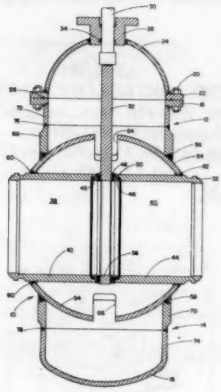
A rotary cam axially actuated diaphragm valve having a rotating valve stem adapter and a valve stem splined thereto. The valve stem is in abutting relationship with a cam on its upper surfaces, and in abutting relationship with a pressure pad on its lower surface. Similarly, the pressure pad is in abutting relationship with a diaphragm on its lower surface, the diaphragm controlling the flow of fluid through the valve; a brass spacer separates the valve stem from the diaphragm. Upon rotation of the valve stem adapter and its splined valve stem, the valve stem contacts the cam which forces the valve stem in an axially downward direction, the axial movement of the stem forcing the non-rotating pressure pad to also move in an axial downward direction, such axial movement of the pad sequentially moving the non-rotating diaphragm in an axial downward direction until closure of the valve is attained. Further rotation of the valve stem adapter and valve stem permits recession of the camming force with a consequent movement of the various components in an axially upward direction and the ultimate opening of the valve to its original fully open position.

3,743,246

FABRICATED ROUND GATE VALVE BODY

Kenneth G. Heller, Redwood City, Calif., assignor to Walworth Company, Bala Cynwyd, Pa.

Continuation-in-part of Ser. No. 116,408, Feb. 18, 1971, abandoned. This application May 30, 1972, Ser. No. 257,764
Int. Cl. F16k 27/00
U.S. Cl. 251—367 **7 Claims**



Disclosed is a fabricated gate valve body structure including top and bottom aligned cylindrical body tube sections adapted to accommodate a reciprocable valve gate. Hubs of circular cross-sections are disposed normal to the body tube sections. Interconnecting the hubs and body tube sections is a central section of spherical configuration, whereby both the hubs and the body sections are welded to the sphere in circular and planar welded joints. Through openings, preferably in the form of slots, are provided at the top and bottom of the sphere within the areas circumscribed by the body section joints to enable passage of the valve gate.

3,743,247

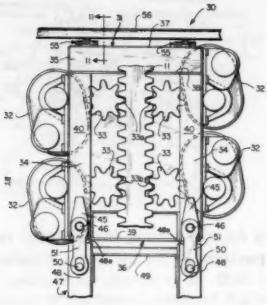
LEG SUPPORTED OFFSHORE STRUCTURE WITH JACKING APPARATUS

Herbert L. Willke, Houston, Tex., and James G. Abraham, Palos Verdes Peninsula, Calif., assignors to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of Ser. No. 876,781, Nov. 14, 1969, Pat. No. 3,606,251. This application May 11, 1971, Ser. No. 142,168
Int. Cl. B66f 7/12
U.S. Cl. 254—89 **14 Claims**

Offshore platforms and like structures of the leg-and-jacking unit type, where the jacking units are based on racks and pinions, are improved by mounting the jacking units with freedom of horizontal movement relative to the vessel in directions in the plane of the rack, and by providing additional means to restrain the jacking units against movement in directions generally perpendicular to the plane of the rack. Such features allow the jacking units to accept small angular

displacements of the legs, and small relative movements between the vessel and the legs in directions lateral with



respect to the legs, without losing precise meshed engagement of the pinions with the rack teeth and without application of excessive stress.

3,743,248

PNEUMATIC JACK

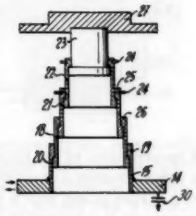
Hans Moor, Kaufman, 4805 Brittnau, Switzerland

Filed Nov. 2, 1970, Ser. No. 86,136

Claims priority, application Switzerland, Apr. 15, 1970, 5647/70

Int. Cl. B66f *3/24*

U.S. Cl. 254—93 R **6 Claims**



A pneumatic jack comprising a telescopically extendable lifting axis which is enclosed by a flexible bellows, the lifting axis having five stages extendable telescopically with a first stage thereof being mounted on a rollable base plate, and at least the third and fourth stages of said lifting axis having a checking means for limiting movement of said latter stages into one another.

3,743,249

HEAVE COMPENSATOR

Francois van Daalen, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

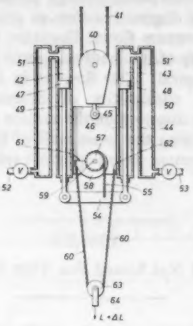
Filed Apr. 20, 1971, Ser. No. 135,667

Claims priority, application Great Britain, Apr. 30, 1970, 20,930/70; Dec. 16, 1970, 59,719/70

Int. Cl. B66d *1/48*

U.S. Cl. 254—172 **9 Claims**

The dead end of a drilling cable is attached to a cable drum operably connected to a cylinder/piston assembly, the cable



drum being spirally shaped to keep the tension in the drilling cable independent of the position of the piston.

3,743,250

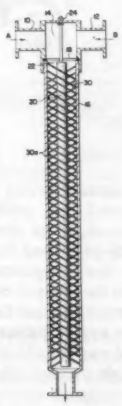
FLUID BLENDING DEVICE TO IMPART SPIRAL AXIAL FLOW WITH NO MOVING PARTS

Edward F. Fitzhugh, Jr.; Barring Coughlin, Jr., and William E. Fitzhugh, all of Suite 1411, The Chesterfield, Cleveland, Ohio

Filed May 12, 1972, Ser. No. 252,701

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **5 Claims**



A blending device with no moving parts, useful to blend at least two liquids co-currently fed to the device in predetermined proportions and spirally flowed axially along the length of the device to exit as a single homogeneously blended stream. Blending is effected by plural flow-director-dividers, diverters, flow-dividers or flow-guides which effect a multiplicity of minor diversions and divisions, without a noticeable blocking effect, to provide a spiral flow of plural parallel streams which are converged into blending zones between successive, longitudinally disposed flow-guides with the same circumferential orientation, and thereafter sub-divided into plural separate streams upon leaving each blending zone. The device is also useful as a blender-reactor for relatively viscous fluids which are desirably kept flowing in the same direction, that is, in which an abrupt change of direction is undesirable.

Another embodiment of this invention is a heat exchanger in which plural, parallel, spiral, axially-flowing divisions of a relatively hot first stream are to be heat-exchanged with plu-

ral, parallel, spiral, axially-flowing divisions of a relatively cold second stream without any intermixing of first and second streams. One stream flows through an inner housing longitudinally, coaxially disposed within an outer housing through which the other stream flows. The inner housing is equipped with a multiplicity of inclinedly disposed interior flow-guides which provide spiral, axial flow as in the blending device hereinabove. A multiplicity of exterior flow-guides are inclinedly fixedly disposed on the surface of the inner housing peripherally abutting the inner wall of the outer housing in fluid-tight engagement so as to provide spiral axial flow for the second fluid.

3,743,251

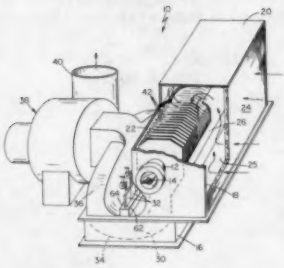
Patent Not Issued For This Number

3,743,252

AIR COOLED EXTRUDER

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Mar. 16, 1972, Ser. No. 235,372
Int. Cl. B01f *7/08*
U.S. Cl. 259—191 **17 Claims**



Forced air cooled extruder having high heat transfer capability employs preformed fins, preferably of silver-bearing copper plate, heat shrunk about steel barrels. Alternatively fins of less strength are prevented from retaining permanent deformation (due to low temperature exposure) by steel hoops which re-deform the fin upon heating. Fins formed with larger area on downstream side and fins with heat flow restrictions on upstream side enable balanced heat flow conditions to be achieved to avoid warping of barrel and binding of screw therein. Fins with straight parallel sides at barrel, and converging straight sides downstream conforming with planar duct wall portions are shown. End to end series of adjustable dampers across duct cross section which corresponds to barrel length provides regulation of air cooling.

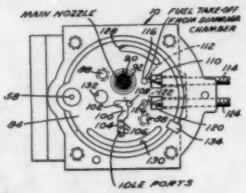
3,743,253

DIAPHRAGM CARBURETOR

Charles H. Tuckey, and Kenneth C. Schneider, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Division of Ser. No. 7,190, Jan. 30, 1970, Pat. No. 3,633,557. This application Oct. 22, 1971, Ser. No. 191,615
Int. Cl. F02m *17/04*
U.S. Cl. 261—35 **1 Claim**

A diaphragm carburetor system and construction in which the carburetor body segments have a number of ports which are formed in opposed surface passages, and a surface gasket between said surfaces with perforate passages registering with the surface passages in a manner to form continuous



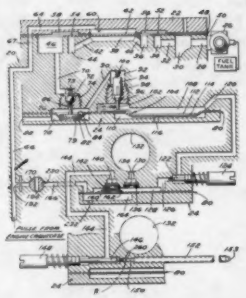
passageways for conducting fuel thereby reducing the cast and drilled passages in the metal body parts.

3,743,254

DIAPHRAGM CARBURETOR

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 853,597, Aug. 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 586,231, Oct. 12, 1966, abandoned. This application Dec. 10, 1970, Ser. No. 96,850
Int. Cl. F02m *17/04*
U.S. Cl. 261—34 A **14 Claims**



A carburetor construction of the type utilizing a diaphragm controlled inlet valve wherein a pressure regulator valve is interposed between a fuel pump and a controlling diaphragm and an accelertor pump is provided to be normally expanded by a resilient bias and adapted to be pulsed by engine crankcase pressure upon the opening of a throttle valve by reason of a valving arrangement of said crankcase pressure responsive to said opening movement. Another feature of the carburetor construction disclosed is the use of an idle passage receiving fuel supply from a diaphragm chamber and leading to idle jets at the mixing passage, the idle passage passing a central area of the diaphragm chamber from which it is fed and being joined at that central area by an air bleed passage wherein the head of fuel at said point of joinder is substantially constant regardless of the position of the carburetor, thereby making it possible to balance out the control of the carburetor for varying positions of rotation in use.

3,743,255

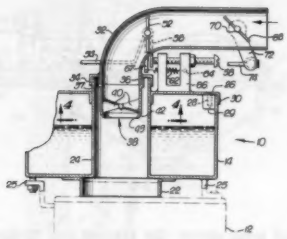
ANTI-SMOG DEVICE

Warren C. Bayton, 15551 S. Lorella Avenue, Gardena, Calif.

Filed Apr. 16, 1971, Ser. No. 134,811
Int. Cl. F02m *29/06*
U.S. Cl. 261—79 R **6 Claims**

An improved fuel mixing device for internal combustion engines which includes a swirl-generating mixing device with an-

gled deflection blades and a lip forming an edge at its bottom to provide improved mixing of fuel such as gasoline with air in conjunction with an adjustable fuel valve prior to combustion



in the engine combustion chamber, so that substantially complete combustion of the fuel is produced, thereby substantially reducing smog producing compounds emitted in the engine's exhaust.

3,743,256

DEVICE FOR EVAPORATIVE COOLING TOWERS WITH WETTED WALLS

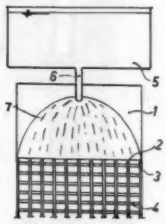
Georg Oplatka, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Doveri & Cie, Baden, Switzerland

Filed Aug. 5, 1971, Ser. No. 169,346

Claims priority, application Switzerland, Aug. 20, 1970, 12501/70

Int. Cl. B01f *3/04*

U.S. Cl. 261—98 **10 Claims**



A wetted wall structure for use in a cooling tower of the evaporative type wherein water flowed downwardly over the walls arranged vertically is cooled by air flowing between the walls comprises, for each wetted wall, a vertical splash-plate to the bottom edge of which is attached a non-woven grid consisting of parallel spaced vertical rods and parallel spaced horizontal rods. The water to be cooled issues from one or more supply pipes, depending upon the width of the splash-plate, its velocity and the angle of impingement on the plate, spreads gradually as it flows downwardly over the plate and thence flows downwardly over the grid in an unbroken film.

3,743,257

CIRCULAR MECHANICAL DRAFT COOLING TOWER

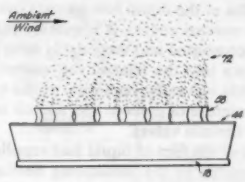
Homer E. Fordyce, 811 East 83rd St. North, Kansas City, Mo.

Continuation-in-part of Ser. No. 115,012, Feb. 12, 1971, abandoned. This application Feb. 17, 1972, Ser. No. 227,097

Int. Cl. B01f *3/04*

U.S. Cl. 261—112 **30 Claims**

A multi-fan, crossflow water cooling tower of circular configuration wherein an annular fill assembly having an open outer air inlet face around the entire perimeter thereof, is positioned beneath an annular hot water distributor and above an annular cold water collection basin. The fan structure comprises a relatively large number of horizontal fans arranged in a cluster pattern inboard of the hot water distributor and each rotatable within a respective upright air velocity recovery cylinder. The clustered fans pull ambient air into the fill assembly through the inlet face, move the air horizontally through the fill assembly in crossflow relationship to water gravitating downwardly therein, and then discharge the air vertically from the cylinders in the form of a high-rising discharge column of hot moist air which resists deflection by



ambient air currents. The cylinders extend above the hot water distributor into the path of ambient currents but are of relatively low height. The circular tower configuration employing a large number of fans located in a cluster pattern minimizes recirculation of hot air back to the tower regardless of the direction from which the wind is blowing or the velocity thereof.

3,743,258

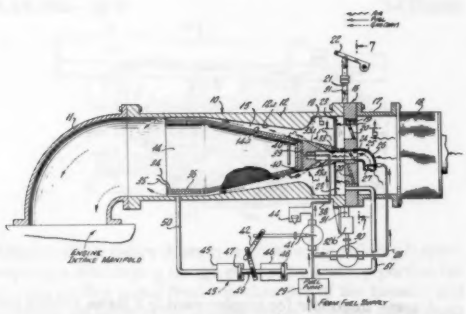
FUEL CONVERTER

Frederick W. Florentine, 332 Wayne Terrace, Union, N.J.

Filed Nov. 3, 1971, Ser. No. 195,286

Int. Cl. F02m *15/04*

U.S. Cl. 261—142 **10 Claims**



A converter for supplying a combustible mixture of air and a gaseous fuel to an internal combustion engine. The converter replaces a conventional carburetor and its purpose is to effect burning of the fuel mixture more efficiently and completely.

The converter comprises a venturi device having an inlet connected to an air filter and an outlet connected to an intake manifold of an internal combustion engine. A throttle plate located between the venturi device and the filter contains a main throttle valve which controls the supply of air to the venturi device and a second throttle valve which controls the supply of a mixture of gaseous fuel and air to the venturi device.

For idle and low speed operation, the mixture of gaseous fuel and air is admitted through the second throttle valve. For increased speed and power, air is admitted through the main throttle valve and at the same time liquid fuel is supplied to a roughened and heated interior surface of a center of the venturi device. A film of the liquid fuel spreads over the roughened interior surface of the venturi center and is evaporated quickly into gas which mixes with the air.

The amount of liquid fuel supplied to the roughened interior surface of the venturi center is controlled by a needle valve

which is set by a monitoring device. The monitoring device is connected across the venturi device and senses the pressure differential in the venturi device for setting of the needle valve.

Thus, air and a mixture of air and gaseous fuel is admitted to the venturi device through the primary or main throttle valve and the secondary throttle valve in the throttle plate for operation of the engine.

When the film of the liquid fuel spreads over the roughened surface of the venturi center, it is quickly converted to a gas and the gas is combined and thoroughly mixed with warm turbulent air drawn into the inlet of the venturi device through the main throttle valves by operation of the engine. This supplements the mixture of gaseous fuel and air admitted through the secondary throttle valves.

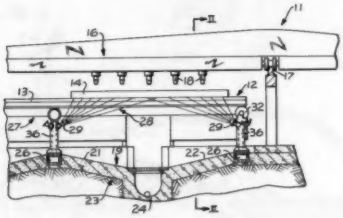
The amount of the film of liquid fuel supplied to the venturi center is controlled by the monitoring device in conjunction with the amount of warm turbulent air entering the venturi inlet through the main throttle valves so that the proper mixture of gas and air is obtained in accordance with the power required by the engine.

3,743,259

SPRAY TREATMENT FOR FLAME CUTTING INSTALLATION

Robert Hennelly, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 30, 1971, Ser. No. 175,949
Int. Cl. F23j *1/00*
U.S. Cl. 266—23 K **8 Claims**



A spray treatment for employment in a flame cutting installation fo the type having a flame cutting machine with cutting torches mounted to traverse steel plate stock, an inclined trough beneath the path of the cutting torches, a settling pit at the lower end of the trough, and a pump for recirculating water from the settling pit to the upper end of the trough during the cutting operation in order to establish water flow through the trough which entraps oxide particles and carries away slag to reduce air pollution and facilitate slag removal. The spray treatment is such as to establish a spray upwardly of the trough for more effectively dispersing or purifying the ambient air about the installation.

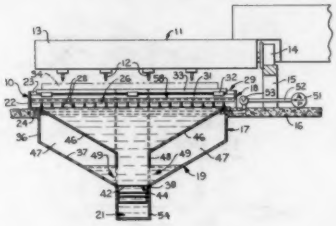
3,743,260

ANTI-POLLUTING WASTE COLLECTOR FOR A BURN TABLE

Mark M. Alleman, Aurora, and Rodger L. Marx, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 22, 1971, Ser. No. 201,083
Int. Cl. F23j *1/00*
U.S. Cl. 266—23 K **12 Claims**

An anti-polluting waste collector for a burn table, adapted for supporting a workpiece beneath a flame cutting machine, includes an open tank containing a liquid maintained at a predetermined level therein and a grating disposed across the tank opening. An air chamber is selectively pressurized to provide a pressure head for normally maintaining the predetermined liquid level above the grating and to lower such level below the grating for convenient removal of waste material trapped thereon.

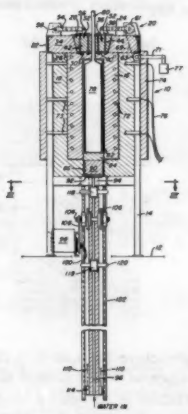


3,743,261

FURNACE AND METHOD FOR HEATING AND COMPACTING POWDERED METAL CHARGES

Anton H. Kinsch, Jr., Camillus; William M. Rogers, Liverpool, and Robert A. Lake, Syracuse, all, N.Y., assignors to Crucible Inc., Pittsburgh, Pa.

Filed July 21, 1971, Ser. No. 164,725
Int. Cl. F27b *17/00*
U.S. Cl. 266—24 **32 Claims**



A furnace, for use in heating charges of powdered metal to compacting temperatures, having an elongated vertically disposed furnace chamber surrounded by heat-insulating material with a lid positioned at the top of said furnace. With the lid in the open position the powdered metal charge to be heated may be vertically inserted and withdrawn from the chamber. For this purpose a pedestal connected to a shaft is movable to a position adjacent the furnace chamber top to receive the charge for heating and may be lowered to a postion near the bottom of the furnace chamber during heating of the charge. The overall furnace arrangement permits the rapid withdrawal of the heated furnace charges for transportation to a compacting means such as an autoclave by a conventional overhead crane.

3,743,262

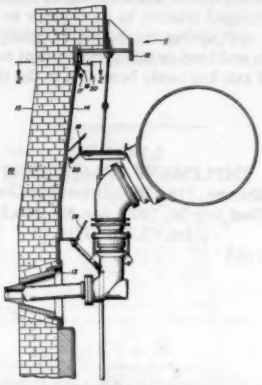
BLAST FURNACE COOLING JACKET

Amon Pete Cowger, Jr., 9938 Hilltop Drive, Baltimore, Md.

Filed Dec. 23, 1971, Ser. No. 211,225
Int. Cl. F27b *1/24*
U.S. Cl. 266—32 **5 Claims**

Apparatus for uniformly distributing a flowing coolant on the external surfaces of a metallurgical furnace, as e.g. a blast

furnace, which comprises a trough extending circumferentially of the furnace and having divider plate means in the



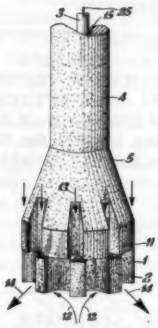
trough for reducing turbulence in the trough and to assure even flow of coolant from the trough.

3,743,263

APPARATUS FOR REFINING MOLTEN ALUMINUM

Andrew Geza Szekely, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 211,950
Int. Cl. C22b *21/06*
U.S. Cl. 266—34 A 6 Claims



The apparatus of the invention is capable of injecting gas in the form of small discrete bubbles into a mass of molten metal. The apparatus comprises a rotatable shaft coupled to drive means at its upper end and a vaned rotor at its lower end. Gas under sufficient pressure to be injected into the melt is fed into a passageway extending axially through the device whereby upon rotation of the rotor the gas is injected into the molten metal and subdivided into discrete gas bubbles. The process of the invention utilizes the above described gas injection apparatus for refining molten aluminum by introducing an inert gas into the metal beneath the surface of the melt.

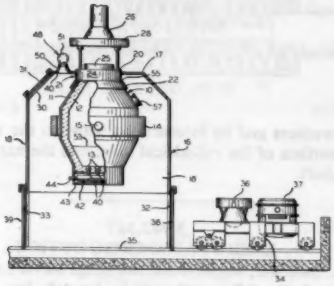
3,743,264

STEEL CONVERSION APPARATUS

Jeorg P. Baum, Essen, Germany, and Alexander T. Dortenzo, Pittsburgh, Pa., assignors to Pennsylvania Engineering Company, Pittsburgh, Pa. and Verfahrenstechnik Dr. Ing. K., Essen, Germany

Filed July 26, 1971, Ser. No. 165,920
Int. Cl. C21c *5/38*
U.S. Cl. 266—36 P 16 Claims

An open topped vessel for converting molten ferrous metal to steel is pivotable about a horizontal axis and has bottom tuyeres which permit the blowing of oxygen or other gases upwardly through the molten metal. An enclosure at least partially surrounds the vessel and co-operates with a smoke hood to prevent the escape of pollutants when the vessel is in its ver-



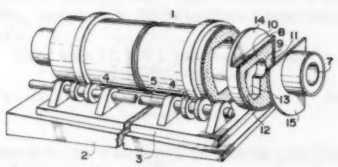
tical position. Suction means is coupled to the hood for creating an in-draft at a closable access opening to prevent the release of pollutants when the vessel is pivoted to place its open top adjacent the access opening for receiving a charge.

3,743,265

ROTARY DRUM TYPE CONTINUOUS REFINING FURNACE

Toyosuke Tanoue, Toyonaka, and Kyoichi Akamatsu, Ibaragi, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Aug. 17, 1971, Ser. No. 172,431
Int. Cl. C21c *7/00*
U.S. Cl. 266—36 H 14 Claims



Disclosed is a rotary drum type continuous refining furnace including a discharging trough presenting a scoop portion for scooping molten metal from the chamber of the furnace and depositing the same in the furnace outlet whereby the amount of residual molten metal remaining in the refining furnace after the completion of the refining operation is minimized. Further, the internal chamber of the furnace is provided with a non-circular cross-sectional configuration in a plane extending perpendicularly of the longitudinal axis thereof for the purpose of improving the mixing action in the chamber during the operation of the furnace.

3,743,266

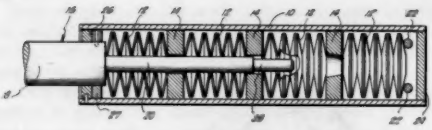
ENERGY ABSORBING ISOLATION SYSTEM

Oded E. Sturman, Northridge, and George C. Roberts, Venice, both of Calif., assignors to Inca Manufacturing Corporation, Inglewood, Calif.

Filed Aug. 26, 1971, Ser. No. 175,186
Int. Cl. B60g *11/34*
U.S. Cl. 267—31 27 Claims

This invention relates to a novel energy absorbing isolation device which will absorb and dissipate a major portion of the energy associated with vehicle collisions. The present invention comprises a cylindrical tube, housing a plurality of Belleville spring washers which are compressed on impact by the wide portion of a movable shaft having a relatively wide portion and a relatively narrow portion. The relatively narrow

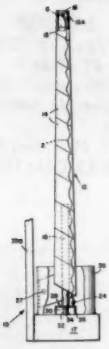
portion of the shaft advances axially into the cylindrical tube as the Belleville washers are compressed. The energy of impact is absorbed and dissipated by compression of the Belleville washers and by interactions between the washers, the inside surface of the cylindrical tube, and the narrow portion of the shaft.



3,743,267
ENERGY ABSORBING DEVICE

Rene L. Guerster, Maple Glen, and Leigh David Leiter, Willow Grove, both of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,299
Int. Cl. F16f 1/22
U.S. Cl. 267—74 **4 Claims**

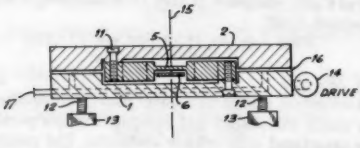


A self-erecting device has a base on which is mounted a self-erecting tube. An energy absorbing coil of wire has one end connected to the outer end of the tube and the other end connected to the base. The erection of the tube extends the coil beyond its elastic unit to absorb energy by deformation in the plastic range.

3,743,268
VIBRATION APPARATUS ESPECIALLY FOR ROTARY OSCILLATIONS

Manfred Heiland, Hahn b. Pfungstadt, and Herwig Hoenlinger, Jugenheim, both of Germany, assignors to Firma Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Aug. 30, 1971, Ser. No. 175,971
Int. Cl. F16f 1/26
U.S. Cl. 267—160 **8 Claims**

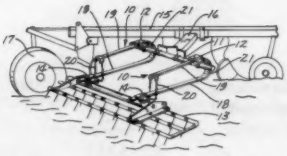


The present vibratory apparatus for determining the mass moment of inertia of bodies has two plates which are vibratable and interconnected by a spring arrangement having at least two spring elements traversing each other in the oscillating axis of the apparatus. Each spring element has a plurality of sections arranged relative to each other so that these sections provide soft spring means easily bendable about said oscillating axis and hard or stiff spring means not easily bendable about said axis but easily bendable in the direction of said axis.

3,743,269
IMPLEMENT ATTACHMENT

Byron L. Godbersen, 710 Circle Drive, Ida Grove, Iowa

Filed July 26, 1971, Ser. No. 166,163
Int. Cl. F16f 1/16
U.S. Cl. 267—164 **3 Claims**

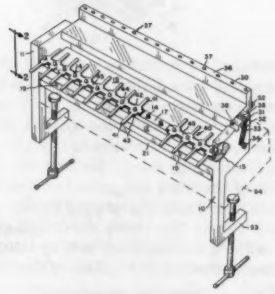


A device for attaching an implement such as a harrow to a drawbar pulled by a tractor. A hairpin spring including two elongated sections connected by an arcuate section is adapted for mounting to an implement and to a drawbar. A restraining means is provided which limits the spread between the two elongated sections during use.

3,743,270
HOLDING DEVICE FOR TESTING ELECTRICAL CONNECTION

Harry Kaufman, 44 Highridge Road, New Rochelle, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,552
Int. Cl. B25b 5/14; B23k 37/04
U.S. Cl. 269—14 **7 Claims**

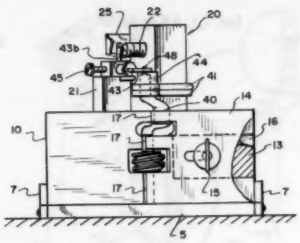


A holding device for testing electrical connections of the solderless wrapped type is described. The holding device comprises a base member having a plurality of aligned spaced projections, a lid member adapted to close over the projections and clamp terminals mounted thereon, and means for ejecting the terminals from the holder. The terminals are preferably provided in the form of a strip having perforations for engaging the projections and extending narrow portions for receiving the wrapped connections.

3,743,271
SOLDERING JIG

Henry C. Schomaker, 992 Wentworth Avenue, Calumet City, Ill.

Filed May 5, 1971, Ser. No. 140,319
Int. Cl. B25b *1/24*
U.S. Cl. 269—37 8 Claims



A jig for assembling and soldering connecting rods and linkage to a crankshaft especially useful for the repair and servicing of gas meters. The jig includes a holding block member adapted to receive a crankshaft and having a sliding lock plate for securing the crankshaft in a proper position for servicing. An adjustable stop is provided to insure the correct angular relationship of connecting linkage to be soldered to the crankshaft and the proper angular relationship is maintained by a suitable spring bias. The holding block is pivotally secured to a base plate such that it may be pivoted into a postion to facilitate the insertion and removal of work pieces placed therein.

3,743,272
PROCESS OF FORMING POLYOLEFIN FIBERS

Kurt A. Nowotny, and Wilbur L. Shilling, both of Camas, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

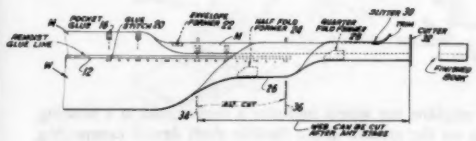
Filed Apr. 12, 1971, Ser. No. 133,367
Int. Cl. B28b *1/08*
U.S. Cl. 264—69 10 Claims

The process of forming polyolefin fibers comprising forming a solution of a linear, high molecular weight polyolefin in a solvent at a temperature above the melt dissolution temperature of the polyolefin, and dispersing the polyolefin solution in a precipitant under conditions of shear stress sufficient to form polyolefin fibers having a microfibrillar structure.

3,743,273
CONTINUOUS WEB FORMING OF ENVELOPES IN PAMPHLETS

Robert E. Katz, 17 Camelot Drive, Livingston, N.J., and Frederick Grainger, North Plainfield, N.J., assignors to said Katz, by said Grainger

Filed Dec. 1, 1970, Ser. No. 94,052
Int. Cl. B41i *43/10*
U.S. Cl. 270—37 8 Claims

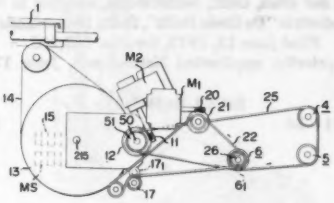


Envelope formed by one margin of moving web, web folded in half forming crease therein, then in quarter fold at longitudinal line having stitch glue thereon, half fold crease slitted to separate pages, and web cut finally to sever separate pamphlets.

3,743,274
DRIVE MECHANISM FOR COPYING MACHINE

Shigehiro Komori, Yokohama, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 784,436, Dec. 17, 1968, abandoned, and a continuation-in-part of Ser. No. 794,153, Jan. 27, 1969, Pat. No. 3,620,620. This application Apr. 15, 1971, Ser. No. 134,140
Claims priority, application Japan, Dec. 31, 1967, 42/187; Jan. 31, 1968, 43/6133
Int. Cl. B65h *5/06, 29/20*
U.S. Cl. 271—3 4 Claims

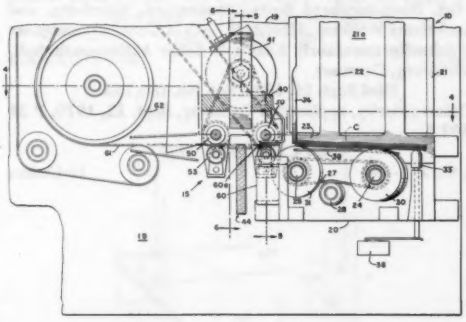


The present invention relates to a drive mechanism for a copying machine provided with a reciprocating feed board which comprises a continuous drive mechanism and an intermittent drive mechanism which is only driven during the copying operation and means for interlocking both drive mechanisms for preventing the occurrence of an error in paper and original feed speed between these drive mechanisms.

3,743,275
DATA PROCESSING EQUIPMENT

Robert J. Miller, Salford, and Walter Dorfman, Warminster, both of Pa., assignors to Decision Data Corporation, Warminster, Pa.

Filed May 17, 1971, Ser. No. 144,083
Int. Cl. B65h *1/06, 5/00*
U.S. Cl. 271—10 14 Claims



A card feeder for feeding cards from a stack in an input hopper to a reader, punch or other data processing equipment is disclosed. Features include a hopper having a canted feed roll structure and a throat roll for moving cards against a reference edge as they are fed out of the hopper. The feed roll structure comprises a plurality of flexible wafer-like segments each independently yieldable on their drive shaft. All of the sections have a high coefficient of friction on their card engaging surface. The drive roll structure and throat roll are driven by a low inertia motor which is provided with control circuitry for reversing the motor in response to card position when the card leaves the surface of the drive rollers. This restacks a card which has been dragged by friction out of its position of alignment with the other cards in the stack. Also disclosed are

reader features including a parabolic lens, drive rolls for maintaining cards fed from the hopper in aligned position as they are read and cantilevered idler rollers which are adjustably mounted so that there is a clearance between the rolls when cards are not passing through.

3,743,276

DEVICE FOR DELIVERING INDIVIDUAL SHEETS OF FILM FROM A STACK

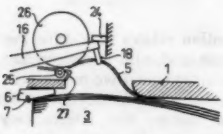
Lucas van der Does, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed June 13, 1972, Ser. No. 262,298

Claims priority, application Netherlands, June 17, 1971, 7108305

Int. Cl. B65h *3/02*

U.S. Cl. 271—24 **5 Claims**



In a device for delivering individual sheets of film from a stack to a conveyor, means are provided to bulge the uppermost sheet of film and to separate the bulged sheet from the stack, the sheet being brought within the reach of the conveyor.

3,743,277

SHEET-FEEDING DEVICE FOR PRINTING MACHINES

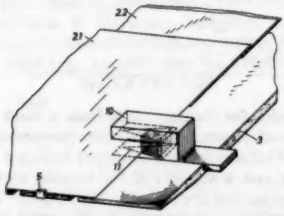
Dr.-Ing. Hans-Bernhard Bolza-Schunemann, Wurzburg, and Karl-Heinz Wolfram, Eibelstadt, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Sept. 15, 1971, Ser. No. 180,752

Claims priority, application Germany, Sept. 22, 1970, P 20 46 602.8

Int. Cl. B65h *9/10, 9/20*

U.S. Cl. 271—58 **15 Claims**



The invention relates to feeding and registering sheets to printing machines. Instead of a side lay there is arranged a measuring head, measuring the side position of the incoming sheet which is shifted away from the side lay line according to the difference of a measured value and a target value. The sheet can be shifted by a suction pulling bar or a stop drum or an intermediate drum respectively.

3,743,278

APPARATUS AND TECHNIQUE FOR MOVING OBJECTS PARTICULARLY USEFUL IN WATER SKIING

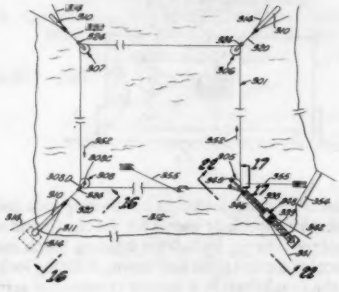
Bruno Rixen, Grossbuchwald Post Neumunster, Germany

Continuation-in-part of Ser. No. 184,738, April 3, 1962, abandoned. This application Oct. 22, 1965, Ser. No. 502,229

Claims priority, application Germany, Apr. 5, 1961, R 30035

Int. Cl. A63g *3/00*

U.S. Cl. 272—32 **28 Claims**



A towing system in which a moving traction means has pickup means thereon movable into engagement with one end of an elongated element, such element being capable of transmitting tension forces but being incapable of transmitting compressive forces and having a body attached to its other end. Such element is maintained taut preparatory to and during the instant of initial connection between the traction means and elongated element so as to extend tautly at a right angle with respect to direction of movement of such traction means whereby the body is accelerated smoothly and without substantial jerk from zero speed to the speed of the traction means.

3,743,279

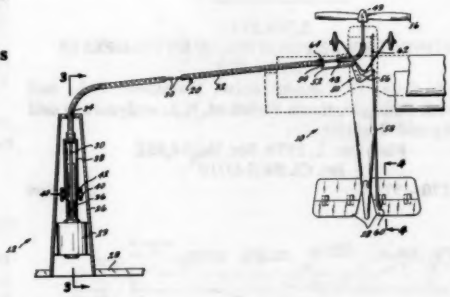
CONTROL MEANS FOR STUNT VEHICLES

Richard S. Chang, Rolling Hills Estates, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 16, 1971, Ser. No. 208,663

Int. Cl. A63h *27/04*

U.S. Cl. 272—31 A **7 Claims**

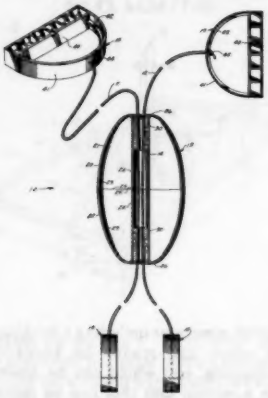


An airplane toy which includes a motor held in a housing resting on the ground and a flexible shaft device connecting the motor to an airplane to drive the airplane propeller. The housing that holds the motor also has an actuator coupled through the flexible shaft device to elevators on the airplane, for pivoting the elevators to make the airplane dive or climb, the actutor sliding the sheath of the flexible shaft device relative to its shaft to operate a mechanism on the airplane that pivots the elevators.

3,743,280
EXERCISING DEVICE

Daniel G. Martinez, Sylmar, Calif., assignor to Rainbow Lifegard Products, Inc., El Monte, Calif.

Filed Oct. 20, 1971, Ser. No. 190,911
Int. Cl. A63b 21/00, 21/28
U.S. Cl. 272—57 R 15 Claims

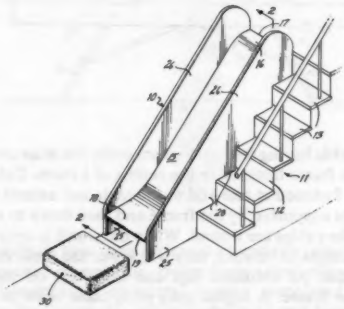


An exercising device includes a pair of elongate flexible cords of substantially equal length which are passed through a hole formed in a shuttle assembly. The cords are passed only once through the hole and are loosely journalled by the shuttle. A handle is connected to each end of each cord so that the shuttle is caused to move rapidly back and forth along the cords when the cords are held relatively taut between two people using the device, and first one person and then the other rapidly moves his handles apart from each other when the shuttle is adjacent him. The cords are of sufficient length and the shuttle is of sufficient weight that enough effort is required to propel the shuttle back and forth along the cords that the device functions effectively as an exercising device which also has significant entertainment value.

3,743,281
PLAY SLIDE

William T. Gimbel, 8734 Ditman St., Philadelphia, Pa.

Filed Nov. 16, 1971, Ser. No. 199,140
Int. Cl. A63g 21/00
U.S. Cl. 272—56.5 R 4 Claims

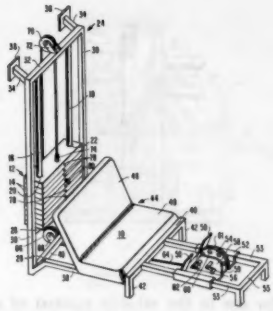


A play slide wherein an inclined slide member is disposable over a stairway, a plurality of rest members being carried on the underside of the slide member for resting engagement with respective stair treads, and side members extending along the slide member for retaining a sliding child on the slide member.

3,743,282
WEIGHT TRAINING DEVICE

Harold Zinkin, Fresno, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 22, 1971, Ser. No. 191,757
Int. Cl. A63b 21/00
U.S. Cl. 272—58 1 Claim

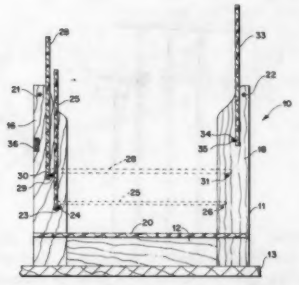


An improved weight training device particularly adapted for exercise of the lower limbs includes a weight stack, a seat facing away from the weight stack but adjacent thereto and a moveable set of foot pedals disposed ajacent the seat on the side thereof opposite the weight stack. The pedals and weight stack are interconnected so that movement of the pedals away from the device raises the weight stack. The spaced of the pedals from the seat is adjustable.

3,743,283
EXERCISING STEPS

Hubert Leon Garrett, 427 Lynn Court, Nashville, Tenn.

Filed June 18, 1971, Ser. No. 154,274
Int. Cl. A63b 23/04
U.S. Cl. 272—70 6 Claims



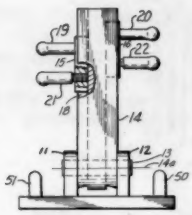
An exercising device having a plurality of vertically, and preferably uniformly, spaced step members, each of the step members, except the first or lowest step member, being movable between its horizontal operative position and an inoperative position out of vertical alignment with the other step members, so that a person may step from the floor to any one of the step members at its particular elevation in an exercising routine.

3,743,284

ARM WRESTLING DEVICE

Robert V. Rhodes, Pasadena, and Charles D. Freeman, Rowland Heights, both of Calif., assignors to said Rhodes, by said Freeman

Filed Feb. 22, 1971, Ser. No. 117,235
Int. Cl. A63f 9/00; A63b 67/00
U.S. Cl. 273—1 R 5 Claims



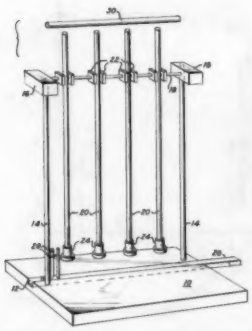
A device for use in the athletic contest of arm wrestling which reduces or eliminates the advantage to a participant who has the longer length of arm between elbow and wrist, and prevents either contestant from taking advantage of the other by cocking his wrist. The device includes a pivoted lever with handles to be grasped and, in different embodiments variously includes; a plurality of stackable elbow rest blocks to adjust the elevation of the elbow; a sliding block to which the handle is attached, the sliding blocks being mounted to the pivoted lever on each side thereof, or a plurality of holes on each side of the lever into which the handles may be fitted, to allow adjustment of the spacing between the handles and the pivot; and a second handle on the lever to restrain the wrist from cocking.

3,743,285

PENDULUM GAME

Lee R. Walker, 511 S. 19th Avenue, Hattiesburg, Miss.

Filed July 11, 1972, Ser. No. 270,629
Int. Cl. A63f 9/06
U.S. Cl. 273—1 R 8 Claims



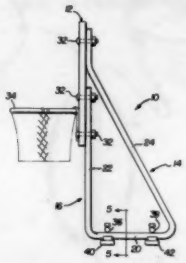
A pendulum game that includes a plurality of obstruction sticks that extend upwardly of a base and are mounted for movement longitudinally of the base. The obstruction sticks are in intersecting relation with and movable past a plurality of spaced pendulums that oscillate in planes that are transverse to the path of movement of the obstruction sticks.

3,743,286

WATER BASKETBALL APPARATUS

Frederick B. Weinhagen, 18 Elizabeth Street, S. Burlington, Vt., and G. Woodbury Weinhagen, 2840 N.E. 26th St., Fort Lauderdale, Fla.

Filed Nov. 3, 1971, Ser. No. 195,117
Int. Cl. A63b 63/00
U.S. Cl. 273—1.5 R 3 Claims



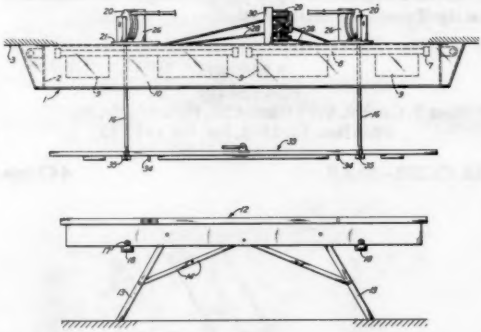
Water basketball apparatus including a backboard and standard assembly which can readily be knocked down and packaged for shipping, and which can be assembled by the user to provide a mobile unit that can be moved anywhere around a swimming pool and fixed firmly in place. The standard includes triangular legs of bent tubing connected by braces and having resilient feet. The legs may be held down by weights.

3,743,287

COMBINED FRAME AND ELEVATABLE POOL TABLE ASSEMBLY

Charles J. Liermann, 3591 School Road, Murrysville, Pa.

Filed Jan. 19, 1972, Ser. No. 219,029
Int. Cl. A63d 15/00, 15/04
U.S. Cl. 273—5 B 7 Claims



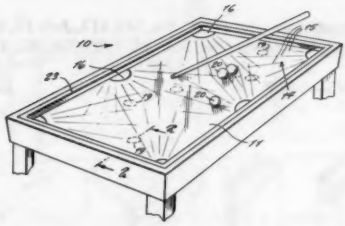
A pool table having fold-up legs normally fits in an overhead rectangular frame fastened to the ceiling of a room. Cables are removably fastened at one end to the table and extend up and over pulleys supported by the frame and then down to a winch on which the cables are wound. When the winch is operated to allow the cables to unwind, they will lower the table from the frame so that its unfolded legs can then rest on the floor beneath the frame. A legless ping pong table rests on top of the pool table and can be lifted up into the frame by means of the cables whenever it is desired to play pool on the pool table. When the tables are stored in the frame, they may be held by a series of hooks so that tension may be taken off the cables. An additional feature of the frame is the inclusion of light sources placed around its periphery so that the frame can also function as a light fixture.

3,743,288

COMBINATION POOL TABLE AND BILLIARD BALLS INCLUDING ERRATIC MOVEMENT AND SHOT DIRECTING FEATURES

Lawrence H. Danklefsen, 4016 E. Catawba Road, Port Clinton, Ohio

Filed June 16, 1972, Ser. No. 263,663
Int. Cl. A63d 15/00
U.S. Cl. 273—6 1 Claim



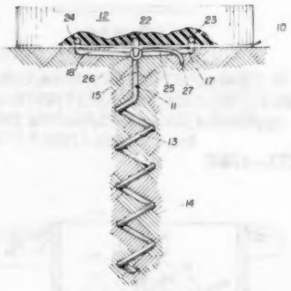
A billiard table for playing a "crazy pool" game, the table including a transparent flat glass playing surface with a paper sheet there-below on which is imprinted a set of radiating lines that radiates from each pocket so to aid in directing a shooting of a ball toward the specific pocket, a series of permanent magnets hidden below the imprinted paper sheet so to divert the intended course of the ball, each of the balls being made of rubber with an iron core for responding to the magnet attraction, the iron core being possibly off center to increase the probability of an eccentric course of travel, and the pool table having a formed steel cushion or any other non-resilent material such as wood, molded plastic or molded hard rubber, instead of a conventional rubber cushion around its edge for being hit by the balls.

3,743,289

BASEBALL BASE AND FASTENER THEREFOR

David L. Golomb, Port Washington, N.Y., assignor to Everlast World Boxing Headquarters Corp., Bronx, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,024
Int. Cl. A63b 71/00
U.S. Cl. 273—25 15 Claims



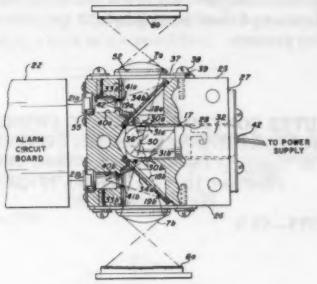
A baseball base and fastener operatively associated with one another comprising respectively, mutually cooperable rigid interlocking elements loosely associated with one another for detachably securing the base and fastener to one another. The fastener includes a self-threading projection extending generally transversely of the base for detachably connecting threadedly the fastener to an external source such as a baseball field. The aforementioned interlocking elements are generally constituted by a plurality of limbs formed as part of the fastener which may be loosely seated in respective slots provided in the base.

3,743,290

FOUL DETECTING SYSTEM FOR A BOWLING GAME

William M. Crimmins; Patrick J. Murphy, and Ivan Zachev, all of Muskegon, Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Filed Sept. 20, 1971, Ser. No. 181,761
Int. Cl. A63d 5/04
U.S. Cl. 273—50 3 Claims



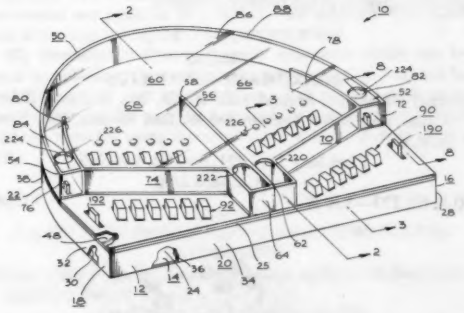
An improved bowling foul detecting system including twin retro-reflective photoelectric detection systems integrated within a single housing and activated by a single light source, visual and audio alarms, and a control circuit including an 80 ms timer to distinguish ball passage, related timer circuits utilizing electronic flip-flops and programmed unijunction transistors, and incorporating SCR and triac power switching elements to control the alarms.

3,743,291

SIMULATED VOLLEYBALL GAME

Taketora Maeda, Tokyo, Japan, assignor to Entex Industries, Inc., Carson, Calif.

Filed July 19, 1971, Ser. No. 163,972
Int. Cl. A63f 7/06
U.S. Cl. 273—85 C 6 Claims



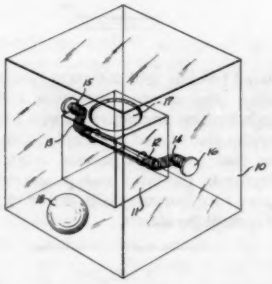
A manually operated game arrangement simulating the game of volleyball. A playing surface is provided and a ball guide wall extends around a periphery of the playing surface. A divider wall extends across the playing surface and terminates in a spaced apart relationship to the ball guide wall to define a ball transfer passageway therebetween and the divider wall divides the playing surface into a first playing area and a second playing area. A first ball service projector is mounted on the playing surface and is adjacent a first end of the ball guide wall in the first playing area and a second ball service projector is mounted on the playing surface and is adjacent the second end of the ball guide wall in the second playing area and remote from the first ball service projector. A plurality of independently manually operated ball strike

devices are provided in each of the first and second playing areas. A ball is served by the first ball service projector and moves adjacent to the ball guide wall and enters the second player area. Independent manual operation of one plurality of ball strike devices in the second playing area by one player causes a hammer to strike the ball when it comes in ball striking relationship thereto to drive the ball back into the first playing area. In the first playing area the process is repeated by the other player to drive the ball back into the first playing area. This continues until the ball is missed by one or the other of the players and then the ball is once more served to repeat the playing process.

3,743,292
OUTER CONTAINER HOUSING SWINGABLY SUPPORTED INNER TARGET CONTAINER

Charles H. Tracy, 30 Diacon's Lane, Wilton, Conn.

Filed Nov. 10, 1971, Ser. No. 197,265
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 1 Claim

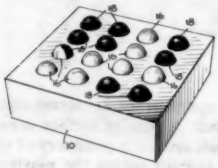


The game includes at least one large transparent container and at least one smaller transparent container resiliently and swingably supported within the larger container and provided with an opening. A play piece is located within the larger container; it is of a shape and size which will make it possible for a player to move it between the two containers and to drop it into the opening of the smaller container.

3,743,293
BOARD GAME APPARATUS

Rachel Chodorov, Second Hill, R.F.D. No. 3, New Milford, Conn., and Benni Korzen, 505 W. End Avenue, New York, N.Y.

Filed May 19, 1971, Ser. No. 144,745
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 1 Claim

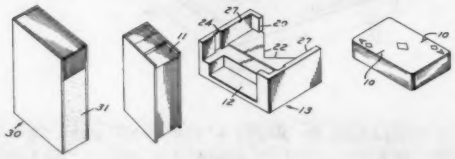


A game construction including a playing board adapted to rest on a supporting surface, a plurality of semi-spherical upwardly facing openings disposed in parallel rows in said board for receiving a like plurality of spherical elements. The spherical elements have the surface of one semi-spherical portion of one color or indicia and the surface of the opposite spherical portion of a second color or indicia. The use of the foregoing construction involves the steps of positioning all of the playing elements with their first color facing upwardly, taking alternate moves by two players, each move consisting of reversing the exposure of a selective number of consecutive playing elements in a vertical or in a horizontal row to expose its second color, continuing the moves until the last playing element remains with its first color exposed, and the player reversing the last element being declared the loser.

3,743,294
BRIDGE HAND DEALING SYSTEM

Lloyd M. Forster, 1624 Lockridge Road, Bloomfield Hills, Mich.

Continuation-in-part of Ser. No. 746,117, July 19, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,329
Int. Cl. A63f 1/14
U.S. Cl. 273—149 P 22 Claims

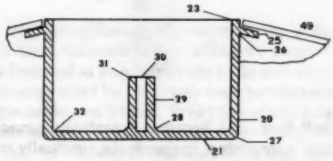


A bridge system including a sealed book of reproduced newspaper bridge columns; punched master cards chosen at random for successive play each containing dealing identification for one complete four-hand deal corresponding to one of the bridge column reported hands, an indication of any vulnerability among the original players, and page cross reference to the corresponding bridge column; playing cards symmetrically face code-marked along side margins for registration successively in superimposed position on a master card; a dealing unit for holding one master card and the deck face down with a mirror under one side margin for viewing code-marked dealing instruction for the lowermost playing card through the punched apertures of the master card; the dealing unit including an escapement slit for one card at a time dealt from the bottom of the deck to the hand indicated by the master card; the master card having alternative punched aperture positions for playing card code marks whereby the viewing of one, or the other, or both, or neither of the alternative aperture marks will indicate to which of the four individual hands the card should be dealt; the corresponding book page being unsealed for comparison after play is completed.

3,743,295
GOLF PUTTING GREEN

Thoburn W. Flowers, 352 E. Kibby, Lima, Ohio

Continuation of Ser. No. 5,273, April 1, 1970, abandoned. This application Jan. 3, 1972, Ser. No. 214,869
Int. Cl. A63b 57/00
U.S. Cl. 273—178 B 3 Claims



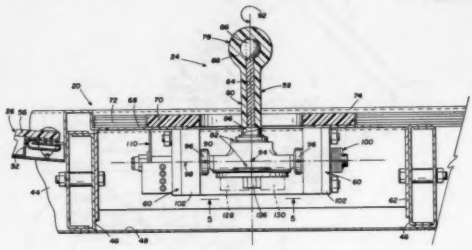
An undulating golf green includes a plurality of components detachably interlocked together. The inner portions of the assembled components encircle a putting cup and are supported by a circumferential flange extending outward from the sidewall of the cup and spaced a short distance below the upper edge of the cup's sidewall. The bottom of the cup is supported by the floor or other ground surface.

3,743,296

GOLF PRACTICING APPARATUS

Weldon K. Branz, Arlington, Tex., assignor to Lectron Industries, Inc., Dallas, Tex.

Filed Feb. 16, 1971, Ser. No. 115,306
Int. Cl. A63b 69/36
U.S. Cl. 273—185 D 5 Claims



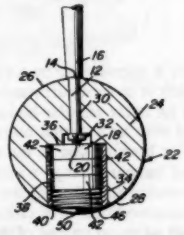
A golf practicing apparatus includes a platform; a target mounted on the platform for receiving practice of golf shots; a display panel for indicating distance information, hook-slice information, and push-pull information; and electronic circuitry responsive to movement of the target for actuating the display panel. The target comprises a simulated golf ball and a stem which are supported for rotation about a first axis extending through the ball and the stem, a second axis extending perpendicularly to the first axis, and a third axis extending perpendicularly to the second axis and in the plane of the first axis. In operation, the speed of rotation of the target about the second axis is sensed to provide distance information, the direction and amount of rotation of the target about the first axis is sensed to provide hook-slice information, and the direction and amount of rotation of the target about the third axis is sensed to provide push-pull information. Rotation of the ball and stem about the first axis is detected by an assembly including a cam and conventional breaker point assemblies. Rotation about the second axis is detected by a system including a lamp assembly, a phototransistor, and a rotatable opaque shutter including two spaced apart holes which permit two sequential light pulses to reach the phototransistor. Rotation about the third axis is detected by a system including a lamp assembly and a rotatable opaque shutter which uncovers one or more phototransistors arranged in a V-shaped array.

3,743,297

GOLF SWING PRACTICE CLUB

Edward J. Dennis, 99 Teresa St., Daly City, Calif.

Filed June 5, 1972, Ser. No. 259,575
Int. Cl. A63b 69/36, 53/04, 53/02
U.S. Cl. 273—193 A 3 Claims



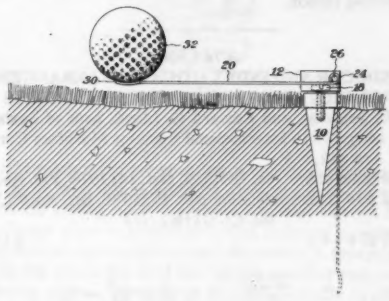
A golf swing practice, training and exercising club which is expressly designed for practicing and developing a well-timed rhythmically speed-controlled golf swing. It comprises a shaft having an upper end with a handgrip and which, generally stated, is comparable with a regulation or conventional handle-equipped shaft. The lower end is provided with a specially constructed head, that is, a ball-shaped head of predetermined diameter and weight. The ball has its upper axial portion bored and constructed to accommodate and fasten a shouldered reduced end portion of the shaft. The end portion of the shaft is screw-threaded to coact with a retaining nut located in an enlargement at the lower end of the bore. A counterbored portion constitutes a socket which opens through the bottom of the head and is lined and internally screw-threaded to accommodate insertable and removable weights held in place by a screw-threaded plug. The plug has a kerf to permit the same to be removed by a coin or a screwdriver.

3,743,298

GOLF TEE

Harry R. Reynolds, Westfield, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 12, 1971, Ser. No. 142,568
Int. Cl. A63b 57/00
U.S. Cl. 273—204 2 Claims



A vertical inverted cone adapted to be placed detachably in the ground is provided with a rotatable cylinder secured to the base of the cone and rotatable about its axis. An elongated horizontal arm is secured at one end to the cylinder whereby the arm rotates therewith. The arm is also pivoted on a horizontal axis to the cylinder so that the arm can pivot from a horizontal use position to a vertical rest position. The other end of the arm is adapted to support a golf ball.

My invention is directed toward apparatus which can be used by golfers in the manner of a golf tee and yet cannot be struck by a golf club when driving a ball supported thereby, and which can be readily installed or removed as desired without need for using more than one of same during a day's play.

3,743,299

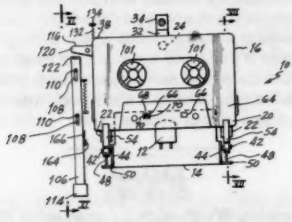
CASSETTE TAPE RECORDING AND REPRODUCING APPARATUS

Shizuo Takashino, Saitama-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 5, 1970, Ser. No. 34,722
Claims priority, application Japan, May 9, 1969, 44/42005; May 9, 1969, 44/42006
Int. Cl. G11b 25/06
U.S. Cl. 274—4 C 14 Claims

In a tape recording and reproducing apparatus having a support and ejection device for a tape cassette and a carriage supporting a head and movable from an inactive station to a recording and reproducing station, the support and ejection device includes a pair of shouldered support blocks adjacent the recording and reproducing station which are adapted to support the forward portion of a tape cassette at a predetermined level with respect to the head; the cassette is urged into engagement with the shouldered portions of the support blocks by a resilient member engaging a rear portion thereof

and is held on the shouldered support blocks by a pair of arm members mounted on the carriage and movable therewith for engagement with the cassette when the carriage is at said recording and reproducing station; the cassette is lifted from the support blocks to facilitate removal from the apparatus by



a pivotally mounted platform operatively connected to an actuator system for movement from a first position below the level at which the cassette is normally supported to a second position which is elevated with respect to the recording and reproducing station.

3,743,300

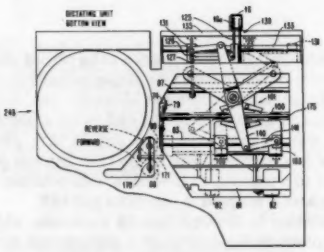
TRANSDUCER AND INDEX MOUNTING ARRANGEMENT FOR DICTATING AND TRANSCRIBING UNITS

Fred W. Johnson, and Edward R. Lloyd, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 767,532, Oct. 14, 1968, Pat. No. 3,610,634. This application Dec. 15, 1970, Ser. No. 98,370

Int. Cl. G11b *21/14*

U.S. Cl. 274—4 J **2 Claims**



A dictating unit has an associated microphone with control buttons for establishing modes of operation and otherwise controlling the unit. The dictating unit is arranged for loading and unloading of a magnetic belt from the side. A transcribing unit has an associated headset and foot control and is arranged for loading and unloading of the magnetic belt from the front of the unit. However, each unit makes use of the same basic frame and common operating mechanisms. For maximum convenience, the common mechanisms are oriented in a preferred direction, differing by 90°, with reciprocable movement of transducer and index means in the dictating unit and transverse movement (at 90°) of the transducer and index means in the transcribing unit.

3,743,301

APPARATUS FOR OPERATING ON TAPE IN TAPE CARTRIDGES

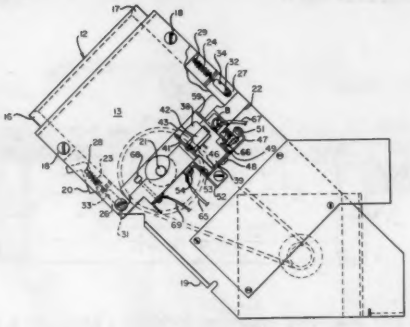
William C. Bennett, Menlo Park, Calif., assignor to Novar Corporation, Mountain View, Calif.

Filed Mar. 25, 1970, Ser. No. 22,619

Int. Cl. G11b *21/24*

U.S. Cl. 274—4 B **4 Claims**

An apparatus including a transducer and a capstan for operating on tape in a tape cartridge having means for receiving the cartridge and positioning the transducer with respect to the cartridge, guide means for guiding the tape past the transducer, drive means for reversibly driving the capstan



whereby to move the tape past the transducer selectively in either direction, and sensing means for sensing the beginning and end of tape.

3,743,302

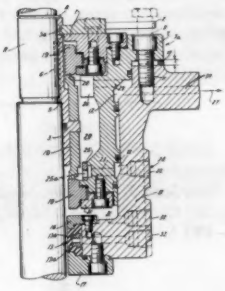
SEALING ARRANGEMENT

Meinhard Bach, Bobenheim-Roxheim, and Friedrich Urban, Frankenthal, both of Germany, assignors to Klein Schanzlin & Becker Aktiengesellschaft, Frankenthal, Germany

Filed Dec. 29, 1971, Ser. No. 213,476

Int. Cl. F16j *15/34*

U.S. Cl. 277—10 **9 Claims**



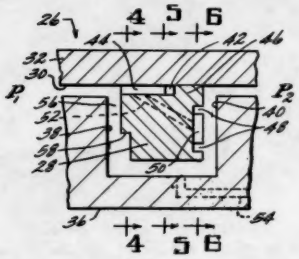
A rotary shaft is surrounded by a sleeve which is rotatable with it and which is in turn surrounded over all but an axial end portion by an inner annular housing. The axial end portion is provided with an external circumferential groove and the inner annular housing has in the region of this groove a radially directed outward flange which is connected with an outer annular housing surrounding the inner annular housing. A circlip is accommodated in a circumferential recess provided in the shaft adjacent an end of the sleeve and the circlip engages the sleeve to prevent its axial displacement with reference to the shaft. Temporary coupling devices are provided on the inner annular housing and can be moved into and out of the groove in the sleeve to thereby temporarily and releasably couple the inner annular housing with the sleeve.

3,743,303

FORCE BALANCED SPLIT RING DYNAMIC SHAFT SEALS

Adam N. Pope, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 29, 1970, Ser. No. 102,440
Int. Cl. F16j 15/16
U.S. Cl. 277—27 17 Claims



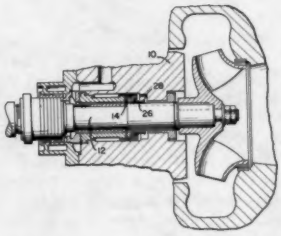
A dynamic shaft seal assembly of the piston ring type includes means for generating servoforces at the seal interfaces to reduce rubbing loads and wear. The servoforces are generated by venting the bottom of a groove which supports the seal ring and by providing passageways through the seal ring to pressurize the low pressure face and the outer face thereof. The forces thus generated vary in response to changes in the dimension of the gap between the seal ring and the seal seats with the overall axial forces tending to center the seal ring in the groove. Leakage is controlled primarily by varying the dimension of a radial passageway formed between the high pressure face of the seal ring and one of the axial seats.

3,743,304

HYDROSTATIC COMPLIANT SLEEVE SEAL

Herman Lindeboom, Pennington, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,281
Int. Cl. F16j 15/24, 15/40
U.S. Cl. 277—27 9 Claims



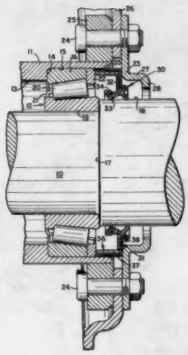
This is an improved straight leak-off seal for use in pressurized equipment with shafts. A sleeve is compliant to pressure differentials and conforms to the shaft while it is rotating, reciprocating, or at rest. Within the stress limits of the sleeve the seal has a centralizing effect on the shaft and acts as a constant flow self-regulating valve.

3,743,305

SHAFT SEAL WITH EXPANDABLE OUTER PERIPHERY

Alfred S. Berens, Farmington; Dean R. Bainard, Novi, and George L. Corsi, Southfield, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 12,563, Feb. 19, 1970, Pat. No. 3,614,183.
This application Apr. 7, 1971, Ser. No. 132,091
Int. Cl. F16j 15/32; F16c 33/76
U.S. Cl. 277—37 8 Claims



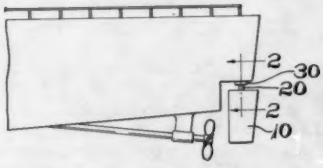
A rigid reinforcing member has a cylindrical portion slip-fitting in the bore and an inwardly extending radial flange. An elastomeric sealing lip is supported for shaft contact by the radial flange while a cylindrical flexing gasket is supported by the cylindrical portion and extends beyond it. A separate rigid ring slip-fits inside the rigid reinforcing member and engages the flexing gasket. When force is exerted axially against the radial flange in one direction and against the separate ring in the other, the gasket is forced out into sealing engagement with the bore wall.

3,743,306

SEAL FOR ROTARY OSCILLATING SHAFT

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,246
Int. Cl. F16j 15/24
U.S. Cl. 277—187 8 Claims

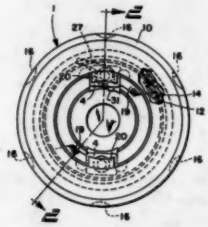


A seal having a hollow center hub with a ring of elastomer bonded around the hub with the elastomer received in a radially compressed state in an outer housing. A thin layer of antifriction material is provided on the inner periphery of the housing radially intermediate the elastomeric ring and the housing. Rotation of the hub less than a predetermined amount is resisted by elastic deformation of the elastomer, whereas, rotation of the hub in excess of the predetermined amount causes the outer periphery of the elastomeric ring to move relative to the housing.

3,743,307
SPRING ACTUATED CHUCK

Milton L. Benjamin, and Wilbur N. Miles, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed July 15, 1971, Ser. No. 162,850
Int. Cl. B23b 31/10
U.S. Cl. 279—91 1 Claim

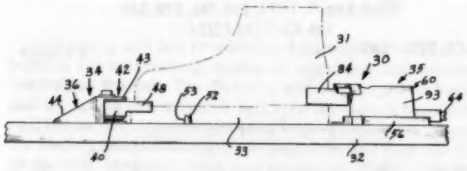


A spring actuated chuck wherein a slotted flange, tapered shank tool mounting member is clamped to a holder by a spring actuated clamping and releasing nut assembly which includes a nut member having threaded engagement with the holder, a clamping and releasing ring having clamping and releasing lugs to engage opposite sides of the flange of the tool mounting member thus to clamp the tool mounting member to the holder and to release the tool mounting member from the holder upon turning of the nut assembly in opposite directions, and a latch member which releases said nut assembly for spring actuated clamping movement upon insertion of the shank of the tool mounting member into a socket in the holder.

3,743,308
SKI BINDING

Ivor J. Allsop, Bellingham, Wash., assignor to Jon I. Allsop; Michael G. Allsop; James D. Allsop, all of Bellingham, Wash., a part interest to each

Continuation-in-part of Ser. No. 73,893, Sept. 21, 1970. This application Aug. 9, 1971, Ser. No. 169,928
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 11 Claims



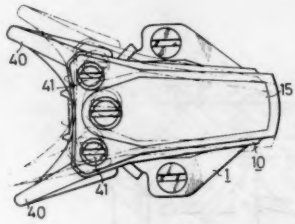
A ski binding that includes a toe and heel clamping means, as well as a pivot mounting for the ski boot, and wherein there is provided a safety release construction as a part of the ski binding.

3,743,309
SKI BOOT TOE FIXTURE

Rokoru Sasaki, and Toshio Miya, both of Tokyo, Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1972, Ser. No. 248,229
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims

A boot toe supporting body is set in a boot toe engaging position by a compression spring and cam means, said compression spring being provided between a ball on a base plate and said supporting body and, thereby, urging said supporting body upwards. Said cam means comprises a cam plate and a vertical pin, said cam plate being fixed or integral with said supporting body and having a protrusion, said vertical pin passing through holes of said cam plate and supporting body and being fixed at its lower end to said base plate. The vertical pin has a projection which is cooperative with said protrusion

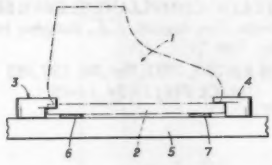


of said cam plate and locates above said protrusion to restrict the upward movement of said supporting body while the toe fixture is in a toe engaging position. When the supporting body rotates about said vertical pin due to severe twisting force applied to the toe, said supporting body goes up or floats from said base plate as said projection on said vertical pin is displaced from said protrusion.

3,743,310
SOLE SUPPORT DEVICE

Thomas Gordon Smolka, Vienna, Mauer, Austria, assignor to Wiener Metallwarenfabrik Smolke & Co., Lindauergasse, Austria

Filed Aug. 23, 1971, Ser. No. 174,061
Claims priority, application Austria, Sept. 24, 1970, 8611
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 C 5 Claims



Means for supporting a ski boot on a ski and for facilitating sideward movement thereof in connection with an emergency release. An endless belt is arranged around suitable support means and positioned for movement transversely of the ski. By supporting the boot on such belt means, same is able to move against low but constant frictional resistance laterally with respect to the ski upon the occurrence of emergency release conditions. The belt may be supported upon fixed plate means suitably spaced from the ski if desired or it can be supported around rods supported, preferably rotatably, in space relationship to the ski.

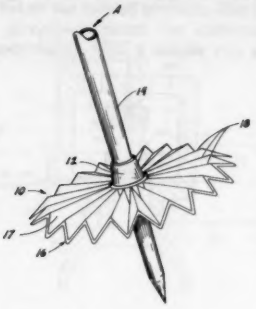
3,743,311
SKI POLE BASKET

James D. Giambazi, 12 Abbott Street, Cumberland Hill, R.I.

Filed Jan. 11, 1971, Ser. No. 105,468
Int. Cl. A63c 11/24
U.S. Cl. 280—11.37 Z 7 Claims

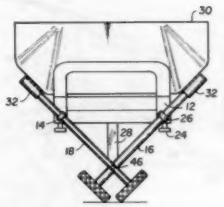
A ski pole basket for mounting on the body portion of a ski pole, includes a hub member for engaging the body portion of

the ski pole, and a skirt member connected with the hub member, the skirt member including a corrugated area having



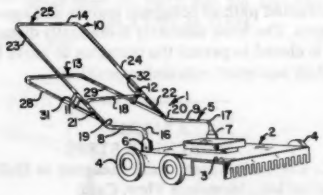
a plurality of corrugations, the corrugated area extending inwardly to the hub member and outwardly from the hub member to the perimeter of the basket.

3,743,312
COMBINED WHEEL BARROW AND HAND TRUCK
Gregory J. Gibbons, Hopewell Junction, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed June 25, 1971, Ser. No. 156,787
Int. Cl. B62b *1/20*
U.S. Cl. 280—47.18 **1 Claim**



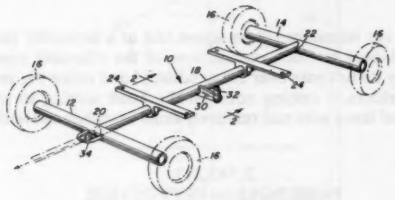
A hand truck can be converted to a wheel barrow by detachably securing a tub thereto and by swinging axles carrying wheels into rest positions adjacent the tub.

3,743,313
LAWNMOWER AND HANDLE THEREFOR
Edward G. Koch, 716 Benton Boulevard, Kansas City, Mo.
Filed Feb. 14, 1972, Ser. No. 226,136
Int. Cl. B62b *5/06*
U.S. Cl. 280—47.37 **8 Claims**



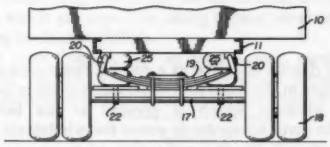
A lawnmower having a housing with wheels thereon to permit movement along a ground surface in response to a push or pull on a handle therefor and mounted on the housing and having a lower handle portion with spaced ends secured to the housing of the lawnmower and upstanding therefrom and respective arms extending from each of the spaced ends and extending substantially parallel with a direction of travel of the lawnmower and an upper handle portion having spaced ends mounted on the lower handle portion and an auxiliary upper handle portion positioned below the first named upper handle portion on each of which has a gripping portion at an upper end thereof and positioned in spaced relation.

3,743,314
VEHICLE LONGITUDINAL TORSION MEMBER
James M. Archer, 2917 Grand Avenue, Billings, Mont.
Filed May 25, 1971, Ser. No. 146,772
Int. Cl. B60g *11/18*
U.S. Cl. 280—124 B **5 Claims**



A vehicle for traversing rough terrain having a torsion member extending between front and rear support members and means movably mounting the vehicle frame with respect to the torsion member.

3,743,315
TRAILER VEHICLE SUSPENSION
Michael Bilas, 2730 Columbiana, New Castle Road, New Springfield, Ohio
Filed Jan. 21, 1972, Ser. No. 219,779
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 R **5 Claims**

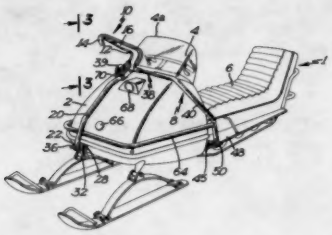


A trailer vehicle suspension suitable for trucks and trailers positions a wheel and axle assembly beneath the trailer vehicle and on the ends of a pair of trailing arms, a semi-elliptic spring positioned transversely of the vehicle and secured thereto and to the wheel and axle assembly lifts the same from a road surface. Air bags positioned between the wheel and axle assembly and the vehicle and means for inflating and deflating the air bags permit the wheel and axle assembly to be lifted from the road surface by the semi-elliptic spring or engaged on the road surface in a weight carrying relation to the trailer vehicle when the air bags are inflated.

3,743,316
PROTECTIVE DEVICE FOR SNOWMOBILES
Gerald L. Stotesbery, 503 South Hill Street, LaCrescent, Minn.
Filed Dec. 19, 1969, Ser. No. 886,709
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 R **1 Claim**

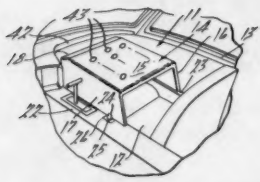
A safty device for a snowmobile takes the form of an upright bar supported in front of the windshield and extending up-

wardly over the top edge of the windshield in position to engage obstacles such as low hanging tree limbs and fence wire to prevent such obstacles from striking and injuring the persons riding on the snowmobile. In one preferred form, the



upright bar terminates at its upper end at a forwardly facing hook adapted to catch obstructions of the aforesaid type so that they do not pass over the windshield and strike the snowmobile riders, a cutting edge on the hook serving to sever strands of fence wire and relatively small branches and limbs.

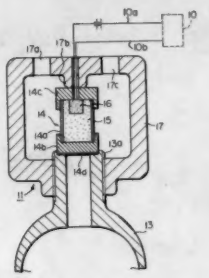
3,743,317
PASSENGER SAFETY DEVICE
William J. Flajole, 20650 Breezewood, Southfield, Mich.
Filed Feb. 10, 1971, Ser. No. 114,232
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B **6 Claims**



A safety device effective as a passive resistance system for the passenger in the front seat of an automobile is formed as a hood-like element which is pivoted at the bottom and weighted to pivot upwardly to cover the windshield when not in use to cut off the forward vision of the passenger. This forces the passenger to pull the hood down over his lap after he sits on the passenger seat. The device will swing up to cover the windshield on impact or will function as a seat belt to retain the passenger in the seat when an impact occurs.

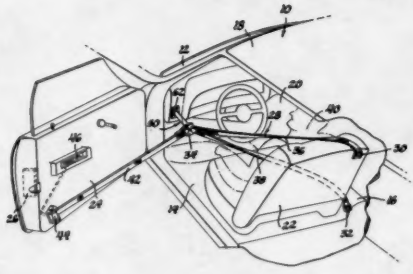
3,743,318
VEHICULAR SAFETY DEVICE
Michio Yamaguchi, Yokohama; Yasuhiro Saito, Tokyo; Tsugio Noda, Kawagoe; Shinzo Tsuji, Kawagoe, and Takashi Mitani, Kawagoe, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan
Filed Apr. 23, 1971, Ser. No. 136,856
Claims priority, application Japan, Apr. 25, 1970, 45/40412
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **4 Claims**

Herein disclosed is a vehicular safety device which is adapted to protect a vehicle occupant or a pedestrian from injury in the event of a collision of a motor vehicle. The safety device has an inflatable protective bag which is arranged to be rapidly expanded to a protective position when the motor vehicle encounters the collision. The inflatable bag is expanded by a pressurized gas which is supplied from an appropriate pressurized gas reservoir through a mechanism



which is responsive to the collision and which has rupturable sealing means including an explosive means activated at the moment the collision takes place.

3,743,319
VEHICLE OCCUPANT RESTRAINING BELT SYSTEM
Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 19, 1971, Ser. No. 200,379
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **3 Claims**

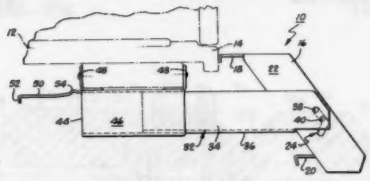


A vehicle occupant restraining belt system includes a first belt whose one end is affixed to the upper inboard portion of a vehicle seat and whose other end is affixed to the body adjacent the lower inboard portion of the seat. An apertured member slidably divides the first belt into lap and shoulder belt portions. A second belt has one end affixed to the apertured member and the other end received in a door mounted releasable retractor which, when the door is closed, draws the respective belt portions to restraining positions across the lap and chest of the seat occupant. A hook assembly attached to the apertured member is manually engageable with a retainer mounted on the instrument panel when the retractor is released to move the belts to an easy-enter position providing an unobstructed path of occupant ingress and egress when the door is open. The hook assembly is manually disengaged when the door is closed to permit the retractor to move the belt portions of their occupant restraining positions.

3,743,320
VEHICULAR STEPS
Arthur C. Clark, San Jose, Calif., assignor to Holiday Vehicle Specialties, Inc., Mountain View, Calif.
Filed Aug. 5, 1971, Ser. No. 169,236
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **5 Claims**

Retractable steps are provided for an entrance-way to a trailer or mobile home or the like. A step unit is readily mova-

ble from any desired stowed position beneath the vehicle to a deployed position in which it provides steps extending both above and below the stowed position. The upper step may be positioned directly adjacent the entrance-way. A simple pivotable mechanism with a simple slot stamped from the



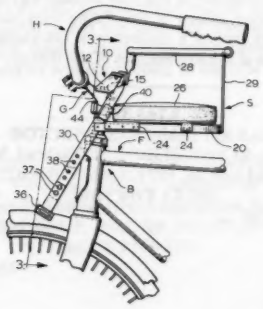
sides of the step unit provides easy manual rotation of the steps from a horizontal stowed position into the upright operating position, and then automatically locks them in position. The mechanism employed is simple and easy to manufacture and allows the step height to be readily varied in manufacturing to accommodate varying vehicles.

3,743,321

REMOVABLE ARTICLE HOLDING DEVICE

Fred H. Luschen, 711 Greenview Road, Itasca, and Raymond C. Piccony, 246 Pamela Drive, Bensenville, both of Ill.

Filed Jan. 3, 1972, Ser. No. 214,811
Int. Cl. B62j *9/00*
U.S. Cl. 280—202 **9 Claims**



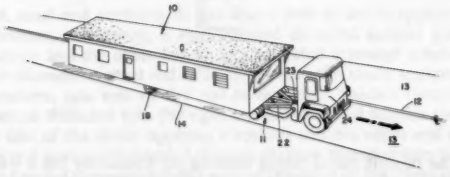
An arrangement for facilitating the removable attachment of an infant seat to a bicycle which includes a bracket permanently attached to the goose-neck of the bicycle and adapted to removably receive portions of said infant seat.

3,743,322

METHOD AND APPARATUS FOR TRANSPORTING LARGE MOBILE HOMES

James A. Sherrod, P.O. Box 217, Pavo, Ga.

Filed Mar. 10, 1972, Ser. No. 233,421
Int. Cl. B62d *37/04*
U.S. Cl. 280—400 **6 Claims**



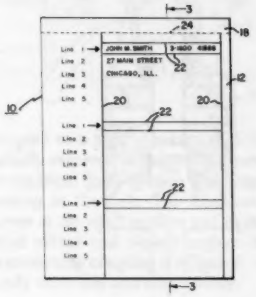
A trailer or transporter for large mobile homes measuring up to 14 feet wide is equipped with a permanent or removable ballast means for shifting the normal center of gravity of the load with respect to the roadway, whereby the caravan is enabled to utilize roads as narrow as twenty feet wide without creating a dangerous traffic situation. A conventional hauling tractor can be employed.

3,743,323

SNAP-OUT SET

Max Houss, 1123 E. 26th Street, Brooklyn, N.Y.

Filed July 31, 1968, Ser. No. 749,186
Int. Cl. B41l *1/24*
U.S. Cl. 282—23 R **9 Claims**



A snap-out set in the form of a unique structural arrangement of an original top sheet and one or more copy sheets. The top sheet has a quality and density meeting the requirements of the scanning apparatus in an optical character reader and is provided with preprinted spaced guide lines (bars) and line designations to enable the typist to visually align message information, for example type characters within certain area limits; for example, an indicia receiving area. The message information or type characters consist of a style or font which is acceptable to and recognizable by the optical character reader. The guide lines and line designations for the typist are of a color or property which is not recognizable by the optical character reader. Hence, the top sheet constitutes a scannable form for the scanning apparatus of the optical reader. One or more underlying sheets may be subdivided into a plurality of labels which are separable along lines of weakening for use as mailing or shipping labels.

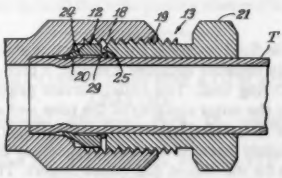
The term "character," as used herein, means any letter, symbol, pattern, word, portion or group thereof capable of being identified by the optical character reader.

3,743,324

ONE-PIECE SLEEVE AND NUT COUPLING MEANS

Albert J. Schwarz, Lincolnwood, and Richard A. Misak, Chicago, both of Ill., assignors to Imperial-Eastman Corporation

Filed Mar. 15, 1972, Ser. No. 234,808
Int. Cl. F16l *19/08*
U.S. Cl. 285—3 **13 Claims**



A coupling for use in coupling a tube. The coupling means includes a one-piece sleeve and nut element connected by a frangible connector with the sleeve being constructed to permit turning under of the connector upon shearing thereof in

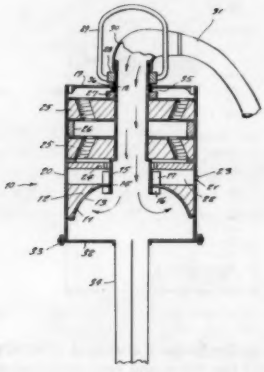
the make-up of the fitting. By thusly accommodating the connector within the sleeve, the connector is prevented from wedging between the tube and nut and thereby permits ready disassembly of the coupling when desired.

3,743,325

SWIVEL UNIT FOR SMALL ROTARY DRILLING RIG

Charles S. Schlarb, Post Office Box 520, Walla Walla, Wash.

Filed May 11, 1971, Ser. No. 142,227
Int. Cl. F16l 7/00, 17/00, 27/00
U.S. Cl. 285—94 1 Claim



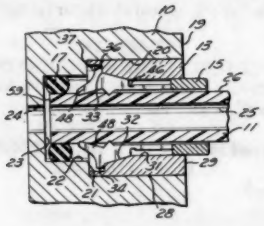
A swivel unit which has for its main part a seal for positioning against a seal shoulder, the seal being expandable outwardly against the shoulder by a liquid pressure, the seal being freely rotatable whenever the liquid pressure is relieved.

3,743,326

RELEASABLE TUBE COUPLING

Louis B. Courtot, Euclid, and Richard H. Dickinson, Jr., Shaker Heights, both of Ohio, assignors to The Weatherland Company, Cleveland, Ohio

Filed May 10, 1972, Ser. No. 252,043
Int. Cl. F16l 17/00, 33/16
U.S. Cl. 285—105 12 Claims



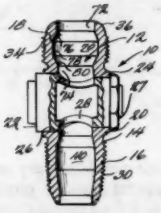
A releasable fluid coupling for connecting a flexible plastic tube to a body member includes a sleeve, a tube gripping collet and an O-ring seal. The collet carries gripping surfaces which engage the outer surfaces of the tube and axial outward movement of the collet causes the collet fingers to grip the tube more tightly because of the engagement of the conical cam surfaces on the sleeve and collet fingers. The collet carries stop means for limiting axial movement of the collet and gripping may take place at two axially separated zones and different conical cam angles impart rotational movement to the ends of the collet fingers to provide different amounts of radial movement for the two axially spaced gripping surfaces.

3,743,327

CORED-OUT FITTING FOR VALVES OR THE LIKE

Robert R. Roos, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Apr. 6, 1971, Ser. No. 131,779
Int. Cl. F16l 5/00
U.S. Cl. 285—192 8 Claims



A fitting such as a corporation stop for use in connecting a service line to a fluid distribution pipe such as a water main or gas main. The fitting is provided on its inlet end portion with a tapered exterior thread for reception in a tapped hole in the main and with an improved flow passageway therethrough which provides the fitting with better leakage characteristics when installed in the main and also improves the flow characteristics through the fitting. In this respect the flow passageway in the area of the threads of the fitting is cored out to increase the diameter of the flow passageway in an area adjacent the exterior thread of the fitting thus resulting in the flow passageway having a thinner wall thickness in this area than in the areas at the extremeties of the thread.

3,743,328

GAS APPLIANCE CONNECTOR

Earl Longfellow, 9 Churchill Road, Marblehead, Mass.

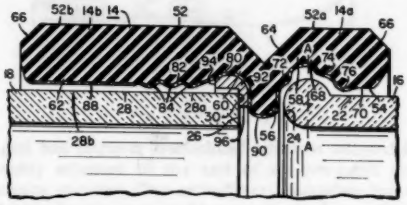
Filed July 26, 1971, Ser. No. 166,027
Int. Cl. F16l 51/02
U.S. Cl. 285—226 1 Claim

The flexible metal tubing forming the connector has a wall thickness of from 0.020 inch to 0.064 inch and is corrugated by two helical corrugations, the coils of which are in alternate arrangement.

3,743,329
PIPE COUPLING

Peter E. Wesel, Sr., Blacksburg, Va., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,036
Int. Cl. F16l 21/00
U.S. Cl. 285—236 3 Claims

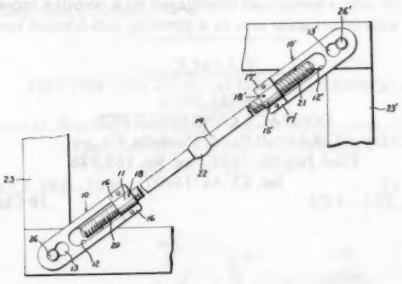


A coupling for joining first and second pipe end portions, the coupling including an annular resilient liner surrounding the pipe end portions and having profiled first and second portions as well as a cylindrical third portion, a force development member having a clamping ring and multiple independent constriction means surrounding the liner for constricting the ring in the areas thereof generally overlying the liner first and third portions to adapt to the wide outside diameter variations due to pipe manufacturing tolerances. The coupling further includes raised sealing ridges on the liner first and second portions as well as interposed barrier means between the pipe end portions and the liner first and second section, with an adhesive means being interposed between the liner third portion and an annular section of the first pipe end portion.

3,743,330
STEEL ROD STRAINING DEVICE

Mikio Itatani, Takatsuki, Japan, assignor to Minato Seiki Kogyo Kabushiki Kaisha, Osaka Prefecture, Japan

Filed Sept. 3, 1971, Ser. No. 177,595
Int. Cl. F16b 7/06
U.S. Cl. 287—60 1 Claim

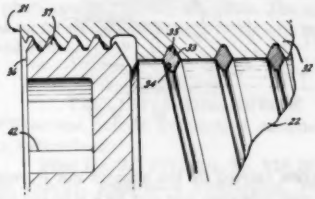


A steel rod straining device has a pair of strain applying members, one having a right handed threaded tubular part thereon and the other having a left handed threaded tubular part thereon. A steel rod extends between the strain applying members, one end of the rod having right handed threads thereon threaded into the right handed threaded tubular part on one of the strain applying members and the other end of the rod having left handed threads thereon threaded into the left handed threaded tubular part on the other of the strain applying members. The strain applying members can be attached to the framework of a structure in which the steel rods are to be used as reinforcing rods.

3,743,331
SHAFT-TO-HUB COUPLING

Irvin E. McWethy, Oxford, Ohio, assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Dec. 30, 1971, Ser. No. 214,078
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R 5 Claims

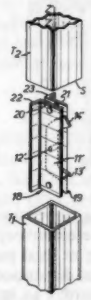


A shaft is coupled to a hub by means of a resilient,helical, wire coil threadedly received in matching grooves formed externally on a cylindrical shaft section and internally within a cylindrical opening in the hub. The land sections between respective grooves in the shaft section and in the hub opening are of substantial extent and closely engage one another. A tight, torque-transmitting coupling is afforded, which coupling is capable of ready assembly and disassembly.

3,743,332
ASSEMBLING OF TUBULAR ELEMENTS

Henri Claude Sonolet, 32, Rue des Renaudes, Paris, France

Filed May 17, 1971, Ser. No. 144,180
Int. Cl. F16b 7/04
U.S. Cl. 287—54 A 12 Claims



This invention relates to a tube joining element comprising a support having therein mounting means transverse to the axis of its associated tube, and an arm member with retaining edges pivotally supported by said mounting means, whereby, when said support is inserted into a tube said retaining edges are pressed by lever action of said arm against the internal surface of said tube to hold the tube joining element in said tube.

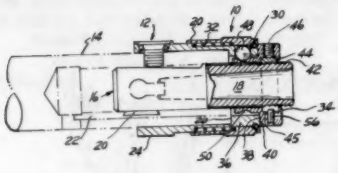
3,743,333
ADJUSTABLE CONNECTION FOR A QUICK CHANGE ADAPTER

Joseph W. Kosinski, Elmwood Park, Ill., assignor to The Bendix Corporation, Southfield, Mich.

Filed July 21, 1971, Ser. No. 164,651
Int. Cl. F16d 1/06
U.S. Cl. 287—52.08 1 Claim

An adjustable connection arrangement for axially adjusting a threaded toolholder with respect to a quick change adapter to preset the tool with respect to the machine spindle including an adapter nut releasably secured to the quick change

adapter and having a bore formed therein in which the OD of the threaded toolholder slidingly fits to insure a minimum runout therebetween. An internally threaded split retaining ring is positioned in an annular groove intermediate the adapter nut bore and disposed to threadedly engage the toolholder,



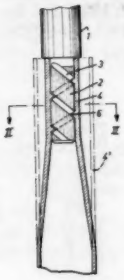
while a set screw carried by the adapter nut is provided to compress the split retaining ring and lock it to the toolholder threads in any adjusted position to thereby create an axial adjustment and locking arrangement between the toolholder and adapter nut without excessive runout.

3,743,334

INTERLOCKING ASSEMBLY AND METHOD OF MAKING SAME

Robert Witsenhausen-Adelman, 26 Saint Vallier-Sur-Rhone, Drome, France

Filed Jan. 8, 1971, Ser. No. 105,045
Int. Cl. F16b 7/00; F16l 21/00; B23p 11/00
U.S. Cl. 287—109 **8 Claims**



A method of interlocking two elements comprises providing an inner element, an outer element capable of surrounding the inner element and locating at least part of the inner element therein. At least the internal dimensions of said outer element are caused to decrease whereby an internal surface thereof is pressed against said inner element to define cooperating surfaces. At least one of said cooperating surfaces is provided with longitudinal splines and thus is sufficiently hard to produce complementary splines in the other cooperating surface. Also, at least one of said cooperating surfaces is provided with a surface interruption extending across the direction of said splines, and being sufficiently hard and suitably shaped produces a complementary interruption in the other cooperating surface. Hence the assembled elements are secured against both longitudinal and rotational relative displacement.

3,743,335

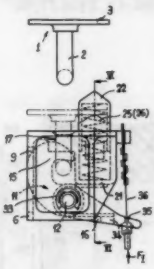
LOCK WITH A STAPLE-TYPE BOLT

Andre Reilhac, and Guy Soetaert, both of Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed July 12, 1971, Ser. No. 161,712
Claims priority, application France, Aug. 4, 1970, 7028688
Int. Cl. E05c 19/10
U.S. Cl. 292—127 **3 Claims**

The lock comprises in a casing a hook formed by an arm of a pivoting lever and maintained by a spring in the locking position in a staple; the casing has a guide for the staple and is comprised of a seating in which there slides an ejector pushed towards the exterior of the seating by springs so that it is in contact with the support of the staple before the end of the movement of the latter towards the hook for the locking; during the unlocking by a remote control causing the hook to pivot, the ejector removes the support from the lock.

The lock is used in automobiles.

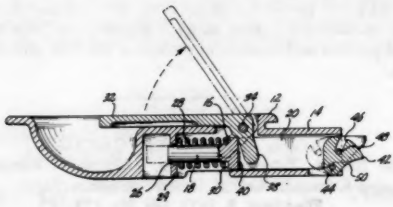


3,743,336

FRICTIONLESS CABINET LATCH

Weldon R. Andrews, Kirkland, Wash., assignor to Sealth Aero Marine, Seattle, Wash.

Filed July 3, 1972, Ser. No. 268,762
Int. Cl. E05c 1/14
U.S. Cl. 292—173 **7 Claims**



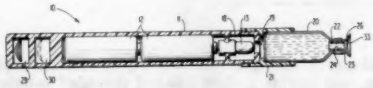
A flush mounted sliding bolt latching mechanism held in engagement with a spring and disengaged by a pivoting recessed handle with offset lever arm or a pivoting anti-friction rocker arm.

3,743,337

CONTACT LENS INSERTER

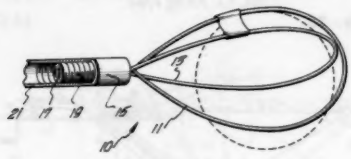
Ely J. Crary, 4730 Austell Road, Marietta, Ga.

Filed July 26, 1971, Ser. No. 165,926
Int. Cl. A61f 9/00
U.S. Cl. 294—1 CA **10 Claims**



Apparatus for supporting and positioning a contact lens to facilitate applying the lens to the eye. The lens is supported on a receptacle by fluid surface tension. A beam of light passing through the supported lens enables the user to accurately preposition the lens with respect to the eye. The light provides a visual cue indicating lens contact with the eye, and the eye-lens surface tension causes the lens to remain on the eye.

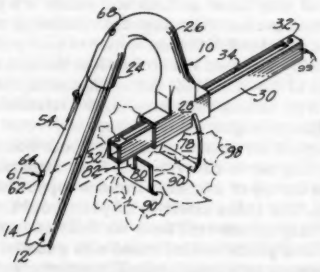
3,743,338
GOLF BALL RETRIEVER
Robert W. Seeger, 10314 E. Live Oak, Arcadia, Calif.
Filed Dec. 17, 1971, Ser. No. 209,289
Int. Cl. A47f 13/06
U.S. Cl. 294—19 A 7 Claims



A golf ball retriever is disclosed which is adapted to be removably attached to the end of an elongated rod or telescoping member. One embodiment comprises two elongated wires forming a pair of loops with the four ends of the loops secured within a tubular hub or bushing. The one end of the bushing is threaded for attachment to the end of an elongated rod. The two loops are perpendicularly positioned with respect to each other to form a cage-like structure. The two wires forming the loops are drawn together midway up the one side of each loop and are secured in that position by a metal band which is crimped onto the two wires. This drawing together of the wires on the one side of each loop causes the other sides of the loops to flex away from each other to form an opening nearly the size of a golf ball. Upon contact with the golf ball, either from the front or side of the retriever, the opening of the loop is slightly expanded to receive the ball and then closes around the ball once it is within the cage-like area formed by the two loops.

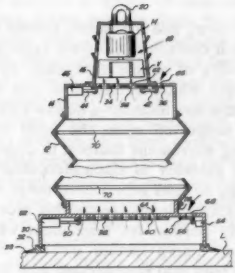
Another embodiment discloses a wire continually wound to form a helix with the one end thereof being connected to the threaded bushing. The mid-portion of the helix is enlarged with respect to the end turns to form a cage-like structure. The other end of the wire which forms the final turn of the helix also forms an entryway which is slightly smaller than the size of a golf ball. The entire helix is compressible upon contact with the golf ball until the entryway is flexed open to receive the ball. When this occurs, the helix again expands to move down over the ball to completely envelop it in the cage-like area formed by the helix. The last turn of the helix than retracts back to its original position to retain the ball within the cage-like structure.

3,743,339
GUTTER AND TROUGH DEBRIS CLEANING IMPLEMENT
Horace D. Brackett, 3317 King Fisher Drive, Decatur, Ga.
Filed Dec. 29, 1971, Ser. No. 213,406
Int. Cl. E04d 13/06
U.S. Cl. 294—19 R 11 Claims



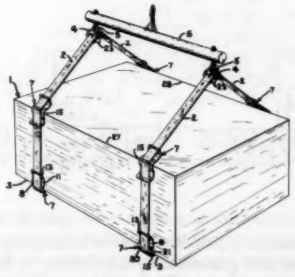
A long, adjustable implement with a sliding jaw movable against a stationary jaw to clamp and trap trash and debris which has collected inside of a gutter from a remote distance on the ground. The jaws are mounted on a bent neck which is part of an adjustable pole of detachable lightweight aluminum tubes in which is a cable and pulley system actuating the movable jaw when it is positioned inside the gutter trough. The tubes are separable for the purpose of adjustment to make the implement shorter or longer and the cables are easily detached and re-attached to permit the adjustment of the tubes. The cable and pulley system includes in the hollow neck several plastic pulleys guiding the cable. The movable jaw is mounted on an elongated carriage inside of a bearing surface on the end of the neck.

3,743,340
VACUUM LIFTING DEVICE
Franz Williamann, Schotz, Switzerland, assignor to GIS AG, Schotz, Switzerland
Filed Jan. 24, 1972, Ser. No. 220,207
Claims priority, application Switzerland, Feb. 10, 1971, 1942/71
Int. Cl. B66c 1/02
U.S. Cl. 294—64 R 6 Claims



A vacuum lifting device comprising a bellows suspended at its upper end and equipped with a load holding mechanism at its lower end. The upper end of the bellows can be connected through the agency of valve means with a vacuum pump.

3,743,341
WEB CORNER PROTECTOR
James G. Gale, Leawood, Kans., assignor to Newco Manufacturing Company, Inc., Kansas City, Mo.
Filed July 26, 1971, Ser. No. 165,901
Int. Cl. B66c 1/12
U.S. Cl. 294—74 1 Claim

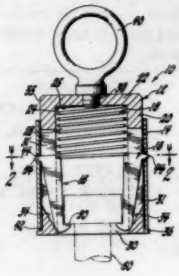


A corner protector having angularly arranged planar portions for engaging surfaces of an article adjacent to a corner thereof with outwardly extending portions provided with apertures through which a web extends. The protector has portions, adjacent the corner, offset outwardly to be spaced from the corner of the article. A slit extending from a side of the protector to a respective aperture permits the protector to be applied to a web intermediate the web ends.

3,743,342
LIFTING CLAMP

Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1971, Ser. No. 186,627
Int. Cl. B25b *5/08*
U.S. Cl. 294—86.31 3 Claims

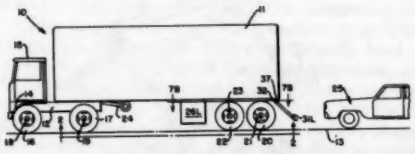


In a preferred form, this disclosure relates to a releasable lifting clamp which comprises a hollow cylindrical body portion with a plurality of axially elongated, circumferentially spaced slots therein which terminate at one end in inclined surfaces. The clamp also includes a hollow cylindrical locking sleeve which is supported upon the body in a concentric manner for sliding movement thereon in opposite directions and which has a plurality of circumferentially spaced slots therein. A plurality of jaws which have tangs received within the slots of the locking sleeve are slidably received within the slots of the body portion for movement with the locking sleeve. The lifting clamp further includes a spring means which biases the jaws into engagement with the inclined surfaces. The locking sleeve when moved in first and second directions upon the body and against the bias of the spring means and with the bias of the spring means serves to expand and contract the jaws, respectively.

3,743,343
VEHICLE SPRAY CONTROL MEANS

Walter F. Grote, Sr., Madison, Ind., and Edward J. Kimmel, Sr., Louisville, Ky., assignors to The Grote Manufacturing Company Inc.

Filed Sept. 21, 1971, Ser. No. 182,369
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S 21 Claims

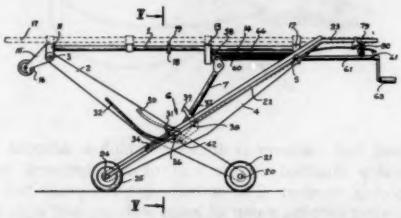


This invention provides means for controlling the discharge of spray and mist generated by the rotation of the wheels of a wheeled vehicle during its forward movement over a wet surface. Basically, the means provided by the present invention comprise baffle means located on the bottom of the vehicle and being arranged to channel air flow generated by its forward movement toward its rear in a direction generally perpendicular to the rotational axes of its wheels such that turbulent discharge of spray and mist from beneath the vehicle in a direction generally transverse to that of its movement is greatly mitigated.

3,743,344
CONSTRUCTION OF A TROLLEY

George Robert Kenneth Jameson, Skerries, Dublin County, Ireland, assignor to Institute for Industrial Research and Standards, The Industrial Research Centre, Dublin, Ireland

Filed Aug. 23, 1971, Ser. No. 174,114
Claims priority, application Ireland, Aug. 24, 1970, 1110
Int. Cl. A61g *1/02*
U.S. Cl. 296—20 14 Claims

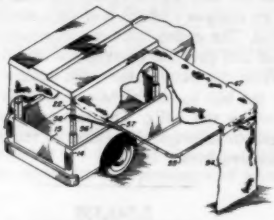


A trolley for use particularly with ambulances and in hospitals which can be readily raised or lowered, fully collapsed to act as a stretcher, or folded to lie on a raised platform, the trolley having a stretcher framework which has two pairs of pivotally mounted wheel supporting legs. The legs on each side of the trolley engage in a scissors like manner and are adapted for relative movement to raise and lower the trolley so that the stretcher framework is always horizontal. Means are also provided to allow the legs to be folded rapidly.

3,743,345
MULTI-USE CAMPER

James R. Eckman, 719 W. Orchid Lane, and Larry D. Keesee, 8023 N. 38th Avenue, both of Phoenix, Ariz.

Filed Dec. 10, 1971, Ser. No. 206,719
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R 16 Claims



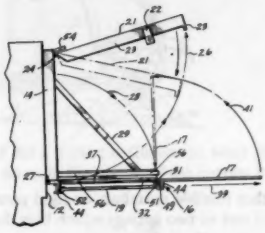
This specification discloses a camper that is susceptible for use in many and varied ways. It includes as essential elements a conventional body of rectangular shape having side walls, a telescopic post at each of the four corners of the body, and a rigid roof mounted on the upper ends of the posts. Each post includes at least three sections and means are provided for holding each section in an adjusted relation to adjacent sections. The upper end of the top section of each post is attached to the roof by a pin and slot connection, the slots of which are transverse of the roof. With this arrangement, the top may be adjusted with various transverse angular relations to the body and at adjacent heights above the body.

A canopy is connected to either or both side edges of the roof and may serve either as side flaps depending from the roof or as the top of a lateral extension supported by the roof and posts. The entire assembly of posts, roof and canopy or canopies may be removed from the body and used as a tent. The roof is of plastic and is formed with a central longitudinal boss presenting an internal channel, the corners of which have fillets of wood embedded therein to impart strength and rigidity to the roof structure.

3,743,346
FOLDING CAMPER EXTENSION

Thomas A. Senn, 723 California Boulevard, Ridgecrest, and Gerald J. Senn, 408A Thompson, China Lake, both of Calif.

Filed Mar. 8, 1972, Ser. No. 232,678
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 12 Claims

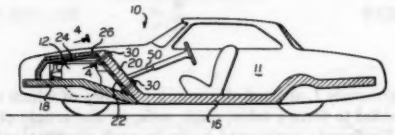


A folding extension having all rigid walls for a camper or the like is provided in practice of this invention. A folding extension may be built onto each side of a camper body at the time it is built, or it may be provided as a kit to be added to the side of an existing camper for providing a supplemental berth. A floor section and a roof section are pivotally attached to the side wall of a camper to pivot down and up therefrom, respectively. The roof section folds down over the floor section when stowed to provide weather protection. Upon unfolding, a side wall and a pair of end walls slide outwardly from beneath the floor section and then pivot upwardly to form the walls of the extension. The roof section pivots back down over the side and end walls to hold them in place and close the assembly.

3,743,347
SAFETY CHASSIS

Barney Pirofsky Shaw, 110 Elmendorf St., Kingston, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,231
Int. Cl. B60r 21/02
U.S. Cl. 296—35 R 4 Claims

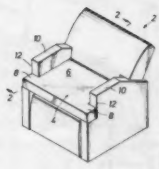


A vehicle chassis formed in two parts subject to being separated in the event of collision to displace the passengers from the line of collision and acting to dissipate the energy of collision and prevent such energy from being transmitted to the passengers. The novel chassis is formed with a passenger supporting portion separable from the rest of the vehicle and arranged to ride upwardly over inclined planes in the event of collision of the vehicle. This is accomplished by forming the passenger supporting portion of the chassis, separate from the engine supporting chassis portion, and coupling the passenger supporting chassis portion to the engine supporting portion along an inclined plane, and arranging wedges along the side of the passenger supporting chassis, so that upon impact, the energy of impact will be taken up by one chassis portion moving relative to the other chassis portion along said inclined plane, or said wedges with the passenger supporting chassis portion moved upwardly away from the rest of the vehicle thus minimizing the likelihood of the passenger colliding with any part of the vehicle.

3,743,348
RECLINING CHAIR AND MECHANISM THEREFORE

Crawford J. Sloan, Denton, Tex., assignor to Forrest Dunlap, Jr., Dallas, Tex.

Filed Jan. 18, 1971, Ser. No. 107,012
Int. Cl. A47c 1/02
U.S. Cl. 297—85 15 Claims

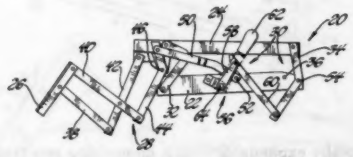


A traditional style reclining chair with a T-cushion adapted to accommodate a sitter in upright and reclined positions and a mechanism therefor in which the rear end of a seat frame drops as a back frame reclines from the upright to a semi-reclined position with minimal rearward movement of the front end of the seat frame. As the back frame reclines further to the reclined position, the rear end of the seat frame moves upwardly, although at all positions a slight floating action of the rear end of the seat frame is provided to enable the particular sitter to seek his own most comfortable position. The back frame is resiliently biased toward the semi-reclined position at the reclined position or any position therebetween. A leg support frame is upwardly extensible via a scissors mechanism upon movement of the back frame from the upright to the semi-reclined position and, according to one embodiment, extends further outwardly upon further movement of the back frame toward the reclined position. Reversible electric motors for effecting the foregoing are attached to the back frame and the scissors mechanism.

3,743,349
MULTIPLE POSITION RECLINING CHAIR ASSEMBLY

McDonald Crum, and Edward L. Hampton, both of Louisville, Ky., assignors to Lear Siegler, Incorporated, Detroit, Mich.

Filed Dec. 16, 1971, Ser. No. 208,677
Int. Cl. A47c 1/02
U.S. Cl. 297—85 15 Claims



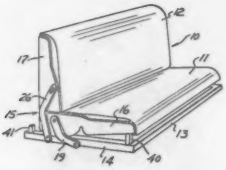
Two embodiments of a multi-position reclining chair assembly wherein both embodiments include a metal plate like support member, a metal plate-like seat member, a leg rest and attendant linkage, whereby the seat member moves forwardly relative to the support member in moving to a reclining position as the leg rest is extended so that no room is required behind the chair to accommodate reclining movement of the seat back. In one embodiment a manually graspable handle and associated linkage is utilized to move the assembly between an upright position and a fully reclined position, whereas in the other embodiment the assembly is moved between the upright and fully reclined positions by applying force to the seat member.

3,743,350

HINGE SUPPORT MECHANISM FOR A FOLDING BENCH

John J. Allen, 56901 Grand River Avenue, New Hudson, Mich.

Filed Jan. 6, 1972, Ser. No. 215,849
Int. Cl. B60n *1/02*
U.S. Cl. 297—94 7 Claims



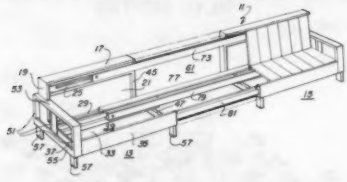
A hinge support for a folding bench having seat and back portions arranged to tilt, lay flat in a horizontal bed-forming plane, and reverse directions, with the hinge support formed of two flat arms secured respectively to the ends of the seat and back portions, with the adjacent arm portion ends overlapping, and pivotally connected together and to a link whose opposite end is pivotally connected to a rail located beneath the arms. The end of one arm is formed as a cam rested upon the rail. The end portion of the other arm is pivotally connected to the rail by another link. The arms are releasably locked to each other by a pin slipped through aligned holes formed in their overlapped end portions. The seat portion is normally arranged at an inclined seating angle and the back portion may be arranged upright or tilted backwardly at an angle. The seat and back portion may be moved into reverse positions, facing in an opposite direction, and still supported upon the cam.

3,743,351

LATERALLY EXPANDABLE COUCH

Charles J. Harris, 249 Sierra Drive, Walnut Creek, Calif.

Filed July 20, 1971, Ser. No. 164,269
Int. Cl. A47c *13/00*
U.S. Cl. 297—107 5 Claims



A laterally expandable couch comprising two framed seat sections. Each seat section has a plurality of slide rails secured thereto aligned with slide rails secured to the adjacent seat section. A plurality of slide bars is slidably held within adjacent pairs of aligned slide rails to enable the seat sections to be laterally moved with respect to each other.

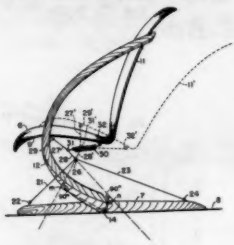
3,743,352

RADIAL RHYTHMIC CHAIR

Charles A. Kallander, 7554 Lynch Road, Sebastopal, Calif.

Filed Aug. 20, 1971, Ser. No. 173,492
Int. Cl. A49b *19/00*
U.S. Cl. 297—285 9 Claims

A chair which moves forwardly and rearwardly in a rhythmic manner on a radius whose center of rotation is located on or near the floor upon which the chair is resting. The chair has a restraint means which prevents the chair from moving forwardly and rearwardly beyond preselected points on the arc described by the radius. The restraint means consists of either flexible members or rigid members pivotally connected and one or two springs which bias the members in a manner to prevent them from assuming a position along a straight line.

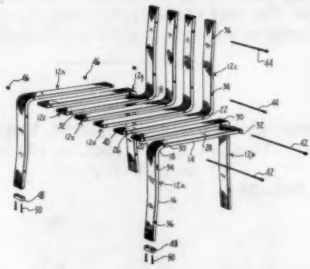


3,743,353

MODIFIED L FURNITURE STRUCTURE

Pesach Lupinsky, 2111 Ashby Avenue, Apt. No. 1, Berkeley, Calif.

Filed Dec. 20, 1971, Ser. No. 209,916
Int. Cl. A47c *7/54*, *7/20*
U.S. Cl. 297—445 6 Claims



A generally L-shaped element, a plurality of which can be assembled to form a table, chair, sofa, or like article of furniture. Uniformly positioned holes in each element and rods which extend through the holes to retain the elements in a unitary assembly. L-shaped elements so formed that they can be assembled in numerous different configurations. An article of furniture that can be disassembled for transport.

3,743,354

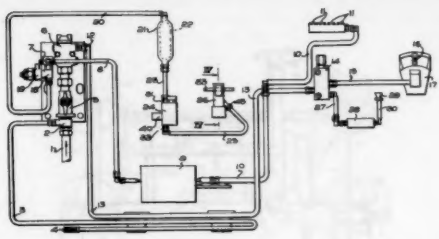
STARTING CONTROL LOCK BY DUST SUPPRESSION CONTROL IN MINING MACHINE

Dennis Alfred Perry, and John Ernest Walford, both of Lenton, England, assignors to Conflow Limited, Nottingham, England

Filed Feb. 11, 1972, Ser. No. 225,525
Claims priority, application Great Britain, Feb. 23, 1971, 5,196/71
Int. Cl. E21c *35/04*
U.S. Cl. 299—1 15 Claims

A mining machine is provided with a lock for the starting device, the lock being withdrawn by a piston and cylinder operated by a bleed from the dust suppression fluid supply, and a restriction is provided in the bleed for causing a delay in the withdrawal of the lock from the moment when the dust

suppression fluid is turned on, whereby the machine cannot be started before the dust suppression fluid has been supplied to



the cutting head for a period sufficient to warn away any personnel working on or in the region of the cutting head.

3,743,355

METHOD OF WITHDRAWING HAZARDOUS GASES FROM SUBTERRANEAN FORMATIONS

Robert J. Blackwell; Alton R. Hagedorn, and Gerald D. Ortloff, all of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Oct. 12, 1971, Ser. No. 188,594
Int. Cl. E21c *35/04*
U.S. Cl. 299—12 **6 Claims**

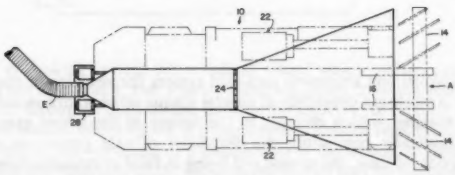
Disclosed herein is a method for withdrawing hazardous gases from a water saturated subterranean formation containing a minable mineral deposit. In the method, wells are drilled through the subterranean formation and water is withdrawn from the subterranean formation to establish permeability to gas within the subterranean formation. Gas is then withdrawn from the formation by means of the wells. This method has particular applicability in reducing the influx of radon into a mine contained in a mineral deposit.

3,743,356

COAL DUST REMOVAL AND COAL TRANSPORTATION SYSTEM

Gene C. Sheets, Box 408, Keystone, W. Va.

Filed Jan. 27, 1972, Ser. No. 221,171
Int. Cl. E21c *41/00*
U.S. Cl. 299—18 **9 Claims**



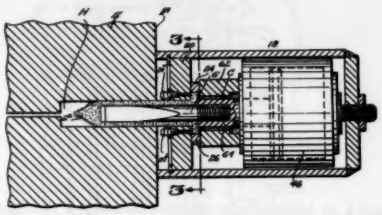
Attachment to a continuous rotary ripper-type mining machine collects the dislodged coal and coal dust particles into a forward opening of a hood enclosure, pulverizes the conveyed coal into smaller particles in a processing chamber located within the forward portion of the hood enclosure, removes by suction fan assembly located within the rearward portion of the hood enclosure the coal dust laden air generated by the mining operation, collects the pulverized coal particles by gravity-fall into an auger-type conveyor screw that is mounted longitudinally in the lower portion of the hood enclosure and that exits through a rear hood opening, forms a suspended stream of an air and coal mixture from the screw conveyed coal particles and the suction collected air in a flexible/rigid booster-type pipeline that discharges the stream to a storage area outside of the mine.

3,743,357

RECIPROCATING WEDGE STRUCTURE INCLUDING LUBRICANT SUPPLY MEANS

Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher, Co., Westford, Mass.

Filed Nov. 26, 1971, Ser. No. 202,500
Int. Cl. E21c *37/04*
U.S. Cl. 299—22 **3 Claims**



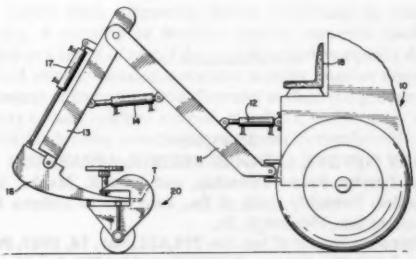
Lubrication for a fluid power actuated reciprocating wedge apparatus is carried out in a manner to protect wedging surfaces susceptible to rapid wear under exceedingly heavy load forces of as great as fifty tons or more. The wedge apparatus includes a spring-loaded wedge device, a wedge retaining structure, a driver mechanism for transmitting driving forces to the wedge device, and means for moving a lubricant of relatively heavy consistency through the wedge retaining structure. Excessive wear of wedge parts, normally taking place at a rapid rate under the heavy load forces noted in the wedging operation, is prevented by moving the lubricant into the spring-loaded wedge device as it expands and contracts so that the surfaces are always protected and a continuous exudation of small quantities of lubricant away from the wedge device is carried out to reduce wear and to exclude abrasive material from exposed slide surfaces of the wedge components.

3,743,358

ASPHALT CUTTING ATTACHMENT FOR BACKHOE BUCKET

William H. Guest, Rt. 206 at Cooper Lane, P.O. Box 434, Chester, N.J.

Filed Mar. 17, 1971, Ser. No. 125,198
Int. Cl. E01c *23/09*
U.S. Cl. 299—40 **11 Claims**

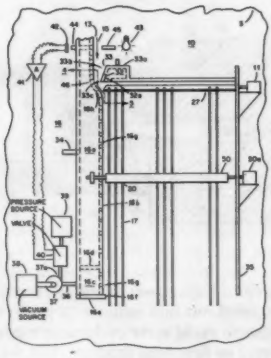


An asphalt cutting attachment for the bucket of a backhoe or similar motor vehicle mounted bucket: a pair of plates are spaced apart so as to avoid interference with the bucket teeth, if any, and have a slot for receiving the front lip of the bucket. Below the bucket lip, front and rear laterally extending bars provide stability against twist, as does a pair of bearing surfaces provided by edges of the plates defining the slot.

3,743,359
FLUIDIC CARD HANDLING DEVICE

Arnold Schonfeld, Norristown, and Edwin R. Phillips, Rosemont, both of Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.

Filed Nov. 16, 1971, Ser. No. 199,262
Int. Cl. B65g 53/00
U.S. Cl. 302—2 R 11 Claims



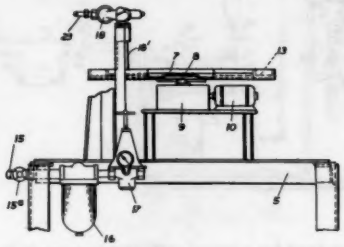
A card return device is provided for a random access mass memory system which utilizes a plurality of magnetic cards stored in a bin or magazine on a set of selector bars. The bin or magazine has adjacent thereto a return track along which the returning magnetic cards ride. A wall member confronting the return track and spaced therefrom forms a throat area through which the cards pass in returning to the bin. The selector bars are located just downstream from the throat area and a pair of pressurized elongated fluid ports located in the return track adjacent the throat tend to force the returning card away from the return track toward the selector bars. A card brake mechanism located in the return track operates to bring the card to a stop position at the point where the trailing edge portion of the card is acted upon by the jets issuing from the elongated ports. The returning card, however, is constrained from moving away from the return track by the wall member forming the throat. Shortly after the card is stopped the brake is turned off to premit the returning card to fall a short distance so that its trailing edge portion drops below the throat. At this time the fluid jets from the elongated ports force the card over onto the selector bars.

3,743,360
DRY POWDER AND DUST FEEDING APPARATUS

Robert Brevko, Peters Township, and John R. Mucka, McCandless Township, both of Pa., assignors to Auburn Engineering Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 775,621, Nov. 14, 1967, Pat. No. 3,608,379. This application Sept. 24, 1971, Ser. No. 183,338
Int. Cl. B65g 53/42
U.S. Cl. 302—36 4 Claims

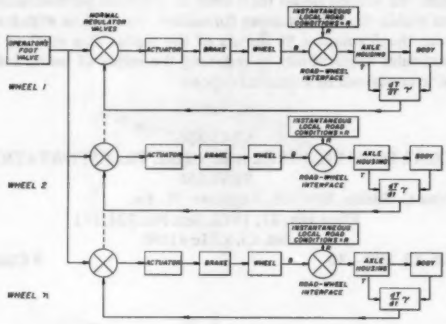
A dust feeder is disclosed having a circular dust-holding trough for holding a predetermined weight of dust. Means is provided for rotating the trough at a predetermined speed. A suction nozzle of a width effective across the entire width of the trough is arranged to remove dust from the trough as the trough rotates whereby a known amount of dust may be removed in a known interval of time, and when necessary, the weight of any dust retained in the trough may be determined. Other dry powders and particulate material may be used in place of dust.



3,743,361
ANTI-SKID SYSTEM AND METHOD

George Vieth, Jr., Springfield, Va., assignor to Diamond Squared Industries, Inc., Phoenix, Ariz.

Filed Aug. 13, 1971, Ser. No. 171,556
Int. Cl. B60t 8/10
U.S. Cl. 303—21 CH 17 Claims



A novel and improved anti-skid system for vehicles or the like is disclosed consisting of an axle torque sensing torque rod for sensing sudden changes in the torque of the wheel axle, hydraulically computing the derivative of axle torque as a function of time, the torque rod being in fluid communication with a pressure regulating valve interposed between the service brake chamber and the atmosphere, transmitting information relating to the derivative of torque to the regulator valve, whereby under impending skid conditions, the regulator valve is caused to bleed fluid pressure from the service brake chamber thereby to permit free rotation of the vehicle wheel involved and prevent wheel lock-up.

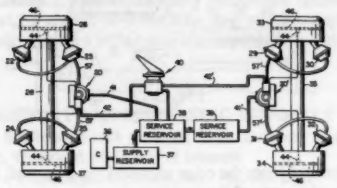
3,743,362
BRAKE CONTROL SYSTEM

James C. Neisch, Orchard Lake, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1972, Ser. No. 214,793
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 5 Claims

An antiwheel-lock brake control system in which, following

the detection of incipient wheel lock, brake apply pressure is initially relieved and thereafter controlled by cyclical time duration modulation of an operator-initiated brake apply pressure.



3,743,363

BRAKING APPARATUS

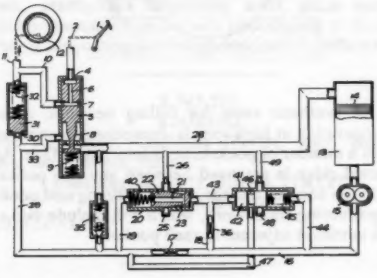
Peter Charles Hodge, and George Franki, both of London, England, assignors to Simms Group Research and Development Limited, London, England

Filed Jan. 18, 1972, Ser. No. 218,752

Claims priority, application Great Britain, Jan. 21, 1971, 2,877/71

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F 8 Claims



A braking system for a vehicle wheel which system comprises a reservoir, and a pump pumping liquid from the reservoir through a conduit and back to the reservoir in relation to the vehicle wheel speed. A progressively closable restriction is provided downstream of a connection to the brakes so liquid pressure upstream of the closable restriction may be increased to apply the brakes. A leakage conduit is provided to by-pass the closable restriction and the connection, and incorporates a variable restriction the opening of which increases with increased vehicle wheel speed. Means are provided to sense the rate of change of wheel rotational speed, and when the rate exceeds a predetermined value, a pressure reducing valve is operated to relieve pressure applied to the brakes.

3,743,364

VALVE

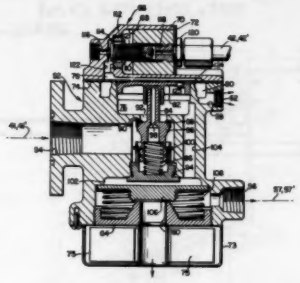
Alton B. Holmes, Troy, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1972, Ser. No. 214,768

Int. Cl. B60t *15/12*

U.S. Cl. 303—54 8 Claims

Control valve for selectively connecting an outlet passage to a source of fluid under pressure or to exhaust, the action of the valve being controlled by regulation of the fluid pressure in a control chamber selectively vented or connected to a source of fluid under pressure by a solenoid operated control valve.



3,743,365

ROTARY SHAFT SUPPORTING DEVICE

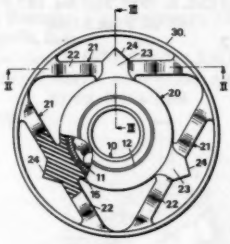
Shogo Kato, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 2, 1971, Ser. No. 168,108

Claims priority, application Japan, Aug. 4, 1970, 45/68137

Int. Cl. F16c *35/04*

U.S. Cl. 308—26 7 Claims



A rotary shaft supporting device comprising an annular housing, a plurality of resilient support members each arranged as a chord of one of the arcs obtained by equally dividing said annular housing, a resilient annular member disposed to contact at its outer circumferential surface the geometrical centers of said resilient support members, and a rotary shaft supporting bearing mounted on the inner circumferential surface of said resilient annular member.

3,743,366

DRAWER SUSPENSION APPARATUS

Michiharu Tazaki, Yokohama, Japan, assignor to Kyoeikogyo Kabushiki Kaisha, Tokyo, Japan

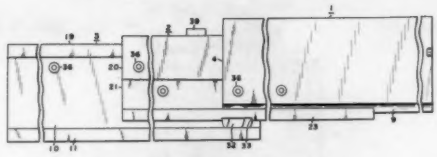
Filed Jan. 21, 1972, Ser. No. 219,803

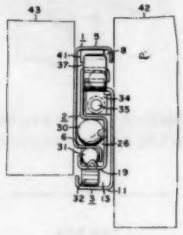
Int. Cl. F16c *21/00*

U.S. Cl. 308—3.8 6 Claims

An extensible drawer support utilizing balls as bearing members can be assembled by a relatively simple procedure by means of retainers mounted at the final stage of assembly

on the top of intermediate rail to fit slidably within a groove formed on the outside panel of drawer rail. The retainers can



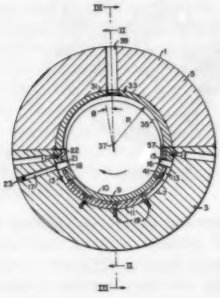


also be used as stopper means for limiting movements of drawer rail relative to intermediate rail.

3,743,367
JOURNAL BEARING

Albert A. Raimondi, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1971, Ser. No. 187,774
Int. Cl. F16c *33/66*
U.S. Cl. 308—122 **8 Claims**



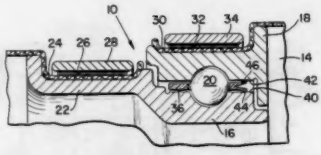
A horizontally split journal bearing having a plurality of ducts underlying a babbitted bearing surface in the lower half of the bearing, and the ducts have oil flowing therethrough to remove heat from the bearing surface.

3,743,368
SEALED BEARING

William Elkins, Canoga Park, and Eugene Connell, Thousand Oaks, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 2, 1968, Ser. No. 702,569
Int. Cl. F16c *1/24*; F16j *9/08*
U.S. Cl. 308—187.2 **4 Claims**

Relatively rotatable annular bearing members, disposed at a rotary joint of a pressurizable garment, define facing surfaces against which bear compliantly the land surfaces of resilient lips of a plastic fluid seal element. Preferably, the lips of the

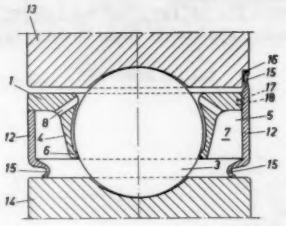


element extend from the edge of, and form a part of, a cage for the rolling elements of the bearing.

3,743,369
CAGE FOR A ROLLING BEARING

Hakon Olof Scheibe Langstrom, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company NV, Amsterdam, Netherlands

Filed Sept. 8, 1971, Ser. No. 178,560
Int. Cl. F16c *33/38*
U.S. Cl. 308—201 **20 Claims**

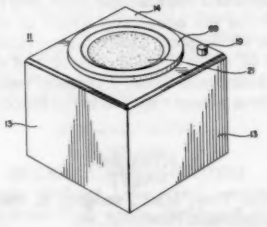


Cages of synthetic resin for rolling bearings, especially bearings operating at high speeds, comprises an annulus provided with a number of pockets at its internal surface. An axially directed ridge is arranged between any two pockets integral with the annulus and the collars defining said pockets to form a reinforcing framework, which will include two chambers for a lubricant adjacent to each pocket.

3,743,370
CABINET FOR A RADIO RECEIVER OR SIMILAR ARTICLE

Paul H. Lindsay, Vernon, and Edward H. Hughes, Clinton, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jan. 11, 1972, Ser. No. 216,954
Int. Cl. A47b *81/06*
U.S. Cl. 312—7 R **15 Claims**



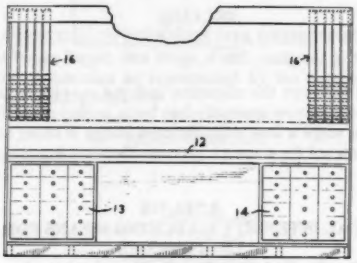
A new and improved cabinet for a radio receiver or similar article comprising a structure, typically cubical, having trans-

parent side walls through which pictures or the like, mounted within the cubical structure, may be viewed. Flexible side walls of an inner structure are spring biased toward corresponding adjacent walls of the transparent structure for holding in place the pictures to be displayed. The radio receiver chassis is secured in easily removable fashion within the cabinet by means of a locking ring which cooperates in locking fashion with a collar mounted on top of the chassis.

3,743,371
DISPLAY AND DISPENSING ASSEMBLY

Joseph F. Sullivan, South Orange, N.J., assignor to Donald J. Mueller, Westfield, N.J., a part interest

Filed Sept. 19, 1966, Ser. No. 580,321
Int. Cl. A47f *1/00*
U.S. Cl. 312—42 **4 Claims**

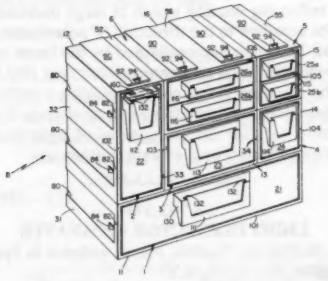


A display and dispensing assembly comprising a plurality of separate, gravity fed dispensing units, each unit being detachably suspended on the unit immediately to its rear and detachably supporting the unit immediately to its front.

3,743,372
STORING

Guiseffe Ruggerone, Confienza (Pavia), Italy, assignor to Nasco, Inc., Chelsea, Mass.

Filed Aug. 26, 1971, Ser. No. 175,127
Int. Cl. A47b *87/00*
U.S. Cl. 312—108 **8 Claims**

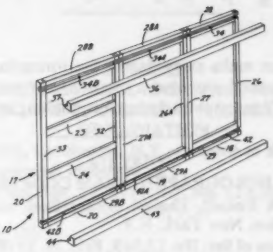


A modular storage system designed with reference to a modular base unit having a height equal to one height module and a width equal to one width module and including at least two removably interconnectable storage units each of rectangular cross section and having a height equal to an integral number of height modules and a width equal to an integral number of width modules, each side wall of each storage unit carrying an integral number of interconnection systems, the number of systems of each wall being equal to the height or width of the particular wall in height or width modules, and each interconnection system of each unit being adapted for removable interconnection with the other unit.

3,743,373
CABINET FRONT ASSEMBLY

Sydney D. Camper, Rte. 6, Box 82, and Worth N. Yoder, 1528 Dogwood Drive, both of Elkhart, Ind.

Filed Mar. 15, 1971, Ser. No. 123,975
Int. Cl. A47b *43/00, 47/00*
U.S. Cl. 312—257 SK **5 Claims**

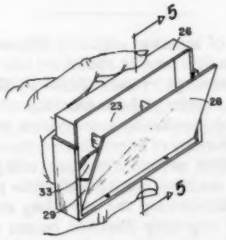


A frame assembly having a plurality of rectangular, wooden and substantially coplanar frame units, each unit having stiles and rails secured together at their adjacent ends. A pair of elongated alignment and connecting elements extend lengthwise of the assembly, the upper element being secured to the upper rails and the lower element being secured to the lower rails, both by a tongue and groove connection. The lower alignment element is arranged to support a shelf and the upper element may be arranged to provide additional support for a counter or attachment to a bulkhead.

3,743,374
STORAGE HOUSING FOR CASES WITH HINGED COVERS

Henry G. Glass, Roanoke, Va., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 1, 1972, Ser. No. 230,830
Int. Cl. A45b *81/06, 88/18;* A45c *11/00;* A47f *1/06;* B65d *83/00;* G11b *1/00*
U.S. Cl. 312—319 **6 Claims**



A storage housing is provided for cases with hinged covers whereby a camming means provided therebetween effects pivotal opening of the case lid upon transmittal of a com-pressive force on the case without removing it from the housing.

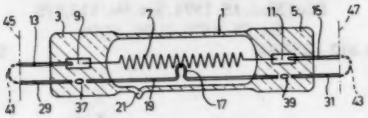
3,743,375
HALOGEN FILAMENT LAMP

Dirk Jules Remi De Fraeye, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,552
Claims priority, application Netherlands, Apr. 4, 1970, 7004872
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **5 Claims**

A method of manufacturing a halogen filament lamp in which a wire supporting the filament of the lamp is used hav-

ing a meltable metal portion. The meltable metal portion is oriented approximately opposite to the sealing foil and the

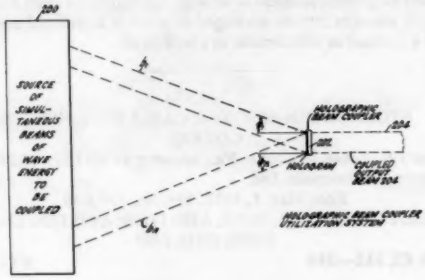


metal portion melts away during the formation of the pinch seal. The method provided a capability of permanently supporting the filament even during the pinching operation.

3,743,376
HOLOGRAPHIC BEAM COUPLER

John Patrick Russell, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 13,569, Feb. 24, 1970, abandoned. This application Aug. 25, 1971, Ser. No. 174,982
Claims priority, application Great Britain, Mar. 26, 1969, 15,956/69
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **10 Claims**



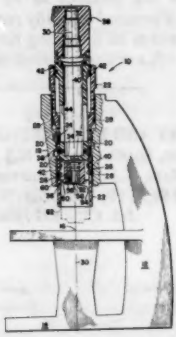
A plurality of separate angularly-disposed beams of wave energy, such as light, can be combined into a single composite beam of wave energy by simultaneously illuminating a holographic beam coupler with the plurality of angularly-disposed beams. The holographic beam coupler is prepared by recording each of a plurality of interference pattern components on a recording medium to form a resultant composite interference pattern on the medium. Each interference pattern component results from illuminating the recording medium with a different pair of angularly disposed beams of coherent wave energy, with the orientation and angle of incidence of one of the beams (the reference beam) of each of the plurality of pairs with respect to the medium being the same as each other and the orientation and angle of incidence of the other of the beams of each of the plurality of pairs with respect to the medium being different from each other and from that of the reference beam of each of the pairs.

3,743,377
DUAL POWER MICROSCOPE

Harold E. Rosenberger, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,811
Int. Cl. G02b *7/04*
U.S. Cl. 350—37 **2 Claims**

A dual power microscope comprises an assembly of eyepiece and objective lenses in fixed relationship to one another and an assembly of specimen stage and a negative relay lens in fixed relationship to one another, the two assemblies being coaxially relatively slidable and the relay being

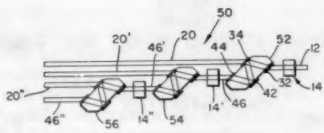


disposed between the objective and the eyepiece. When the eyepiece-objective assembly has been pulled away from the specimen stage a low magnification image is seen; and when pushed toward the stage a high magnification image is seen.

3,743,378
OPTICAL INTENSITY MATCHING MEANS FOR TWO LIGHT BEAMS

Samuel Bousky, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed July 30, 1971, Ser. No. 167,752
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **7 Claims**



A partially-reflecting surface of a beam splitter is made of a dielectric reflecting coating which at large incident angles of light is quite sensitive to the direction of polarization of the incident light. Thus two beams divided by the beam splitter and selectively directed to a common point, in parallel directions, etc., may be matched in intensity by placing a half-wave plate in the entrant beam and rotating same to change the polarization direction to alter the proportion of light that is transmitted and/or reflected by the beam splitter.

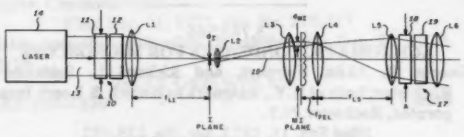
3,743,379
LIGHT DEFLECTOR APPARATUS

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,228
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **5 Claims**

A light deflector apparatus comprising a lens array positioned between first and second identical light deflector stages. Inclusion of the lens array provides for the number of resolvable beam positions to be equal to the product rather than the sum of the resolvable positions of the deflector stages. The first light deflector stage controllably deflects an incident light beam along one of a plurality of discrete directions to impinge on respective lenses of the array which in turn direct the beam onto the second light deflector stage with an angular separation between resolvable beam positions

equal to the full angular deflection range of the deflector stages. The second deflection stage then fills in the voids produced by the lens array by controllably deflecting the



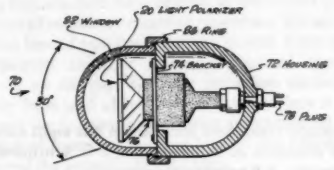
beam to a desired position among respective pluralities of discrete positions corresponding to each angular direction of the beam incident on the second deflector.

3,743,380

POLARIZED LIGHT SOURCE FOR UNDERWATER USE

Ronald Bruce Fugitt, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1972, Ser. No. 222,179
Int. Cl. G02b 5/30
U.S. Cl. 350—152 10 Claims



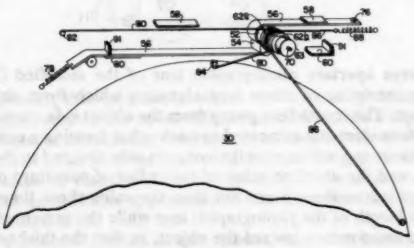
A circularly polarized underwater light source comprising: a conventional unpolarized light source with a well-collimated output; an efficient optical polarizer, which employs multilayer interference polarization, total internal reflection, birefringent quarter-wave plates; and anti-reflection coatings; a lens to control the extent of the divergence of the illuminating beam; and an underwater housing with a dome-shaped window designed to withstand external hydrostatic pressures, part of the winding forming the lens.

3,743,381

ARRANGEMENT FOR EFFECTING ROTATIONAL MOTION BETWEEN POLARIZING ELEMENTS

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 23, 1971, Ser. No. 173,838
Int. Cl. G02b 7/00
U.S. Cl. 350—159 24 Claims



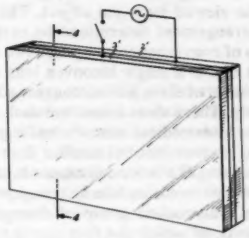
A control device comprising a roller-band and guiding assembly which minimizes friction, in conjunction with tackle means and fixed and rotatable light polarizers in a compact housing to effect a variable transmission of light through an aperture and, more particularly, through the windows of vehicles such as aircraft. The foregoing assembly and tackle means cooperate to convert substantially frictionless linear actuator movement into a greater amount of rotational movement of a light polarizer.

3,743,382

METHOD, MATERIAL AND APPARATUS FOR INCREASING AND DECREASING THE TRANSMISSION OF RADIATION

Paul Rosenberg, Larchmont, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Filed Apr. 12, 1971, Ser. No. 133,205
Int. Cl. G02f 1/28
U.S. Cl. 350—160 12 Claims



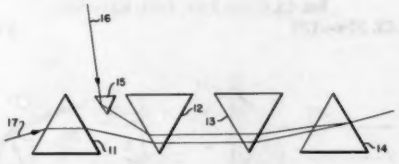
A light control valve is disclosed having certain fluid suspensions therein which when activated increase the transmission of radiation through the valve in one part of the electromagnetic spectrum and decrease the transmission in another part of the spectrum.

3,743,383

HIGH POWER BEAM COMBINER

Thomas G. Giallorenzi, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,427
Int. Cl. G02b 27/12
U.S. Cl. 350—170 3 Claims

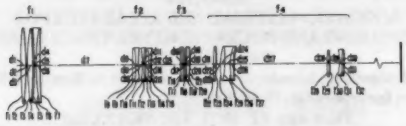


This disclosure is directed to a system of prisms so arranged and related to each other that one may form a collinear composite output laser beam by superimposing several laser beams of the same polarization but with different frequencies.

3,743,384
OPTICAL SYSTEM FOR THE MAGNIFICATION VARYING PORTION OF AN ULTRA-TELEPHOTO TYPE ZOOM LENS

Soichi Nakamura, Kamakura-shi, Kanagawa-ken, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,637
Claims priority, application Japan, Dec. 24, 1970, 45/116646
Int. Cl. G02b 15/16
U.S. Cl. 350—184 6 Claims

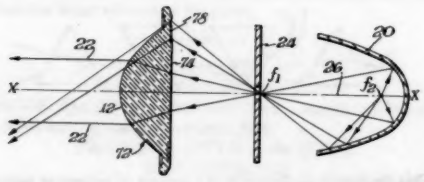


An optical system for the magnification varying portion of an ultra-telephoto type zoom lens comprises three lens groups of convergence, divergence and convergence disposed in the named order as viewed from the object. The optical system has a power arrangement determined by certain conditions. The first group of convergence comprises two components, of which the first one is a single biconvex lens and the second component consists of three lenses, convex, concave and convex, respectively. These three lenses are such that the refractive index of the intermediate concave lens is greater than that of its preceding convex lens but smaller than that of its succeeding convex lens. The second component of the first group also forms a positive meniscus lens system generally convex to the object side. The second group of divergence comprises three components, of which the first one is a negative component consisting of a convex and a concave lens joined together with their interface being concave to the object side, and these two lenses are arranged so that the preceding one has a greater refractive index that the other. The second and third components of the second group may be individual, single, biconcave lenses. The third group of convergence may comprise two components, both of which are positive composite lenses. The first component of the third group is in the form of a meniscus lens generally concave to the object side and the second component of the third group has its interface concave to the object side. The lenses forming the second component of the third group are such that the lens before the interface has a smaller refractive index than the one behind the interface.

3,743,385
FRESNEL ASPHERIC LENS

Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation of Ser. No. 36,880, May 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,179, April 2, 1970, Pat. No. 3,708,221. This application Sept. 25, 1972, Ser. No. 291,759
Int. Cl. G02b 3/04, 3/08; F21r 5/04
U.S. Cl. 350—189 9 Claims

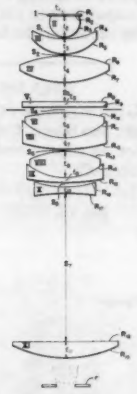


An aspheric lens is made with a fresnel type aspheric curvature on at least a portion of its back surface and with the aspheric curvature being defined in the X-Y coordiante system by a particular relationship in accordance with the index of refraction, heighth, focal distance and radius of back surface parameters.

3,743,386
ACHROMATIC CONDENSER FOR MICROSCOPE

George H. Aklin, Fairport, and Richard L. Seidenberg, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,492
Int. Cl. G02b 21/08
U.S. Cl. 350—214 6 Claims

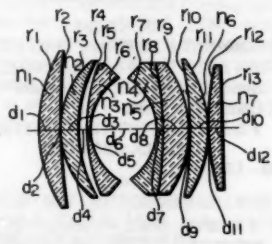


A microscope condenser lens design has eight components and eleven elements in three groups. It is achromatized and has an unusually high numerical aperture.

3,743,387
LARGE APERTURE SIX COMPONENT PHOTOGRAPHIC LENS

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,081
Int. Cl. G02b 9/62
U.S. Cl. 350—215 1 Claim



Large aperture photographic lens of the modified Gauss type consisting of seven lens elements which form six lens groups. The fourth lens group from the object side consists of two lens elements cemented to each other forming a concave meniscus as a whole with the concave side directed to the object, and the absolute value of the radius of curvature of the cemented surfaces is smaller than the value three times the focal length of the photographic lens while the cemented surfaces are concave toward the object, so that the thickness of the fourth lens group is made small thereby permitting the total length of the photographic lens to be made small to increase the light quantity in the marginal zone.

3,743,388

REPRODUCTION OBJECTIVE FORMED OF FIVE LENSES

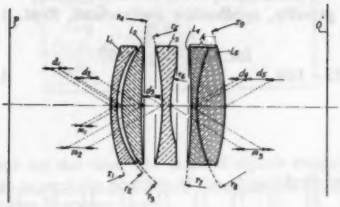
Miloslav Paukert, and Jan Skopal, both of Prerov, Czechoslovakia, assignors to Meopta, narodni podnik, Prerov, Czechoslovakia

Filed Dec. 21, 1971, Ser. No. 210,417

Claims priority, application Czechoslovakia, Dec. 27, 1970, 8785/70

Int. Cl. G02b *9/26, 9/34*

U.S. Cl. 350—220 **2 Claims**



Reproduction objective or lens system, especially suitable for image reproduction in copying machines of a magnification ratio of 1:1, formed by five lenses, axially arranged in such a way that the first lens, nearest to the object plane, is a meniscus lens of negative refractive power and the second lens is a meniscus lens of positive refractive power. Both lenses are either cemented together into one optical member or separated by an air gap, all their refractive surfaces being turned away from said object plane. The next lens is a biconcave lens and the following two lenses are cemented together into one optical member, the first lens of this member being biconcave and the second one biconvex.

3,743,389

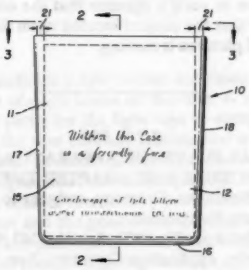
COMBINATION MIRROR AND TRANSPARENT CASE THEREFOR

William B. Stiller, 1142 Greenvale Avenue, and Michael R. Stiller, 709 Hidden Valley Road, both of Akron, Ohio

Filed Apr. 10, 1972, Ser. No. 242,590

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **3 Claims**



A product that includes a mirror and a case specifically adapted to receive the same, with the case being made of soft vinyl material of sufficient thickness to protect the mirror during normal periods of use, and with the case being preferably translucent so that the reflective qualities of the mirror can enhance the aesthetic appearance of the case when the mirror is received therein.

An additional feature is the optional use of a humorous slogan imprinted on the case exterior and being complimentary to the user of the mirror and case.

3,743,390

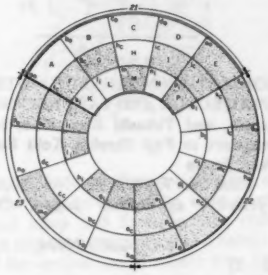
CODED RETICLE HAVING A SHIFTED PSEUDO RANDOM SEQUENCE

Stepehen G. McCarthy, Dobbs Ferry; Irving Roth, Williston Park, and Edward W. Stark, Garden City, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 718,751, April 4, 1968, Pat. No. 3,617,724. This application Sept. 3, 1971, Ser. No. 177,766

Int. Cl. G02b *5/22*

U.S. Cl. 350—314 **4 Claims**



Optical radiant energy encoding and correlating apparatus for eliminating correlation residues including a movable reticle with a plurality of continuous loop tracks each having the same pseudo random code formed thereon for encoding incident radiation and means for correlating the encoded data with a plurality of phase shifted replicas of the pseudo random code, the code in each reticle track being shifted relative to the adjacent tracks by an amount equal to the width of the field focussed on the reticle and a sufficient number of tracks being provided so that the periphery of the field encompasses a complete code.

3,743,391

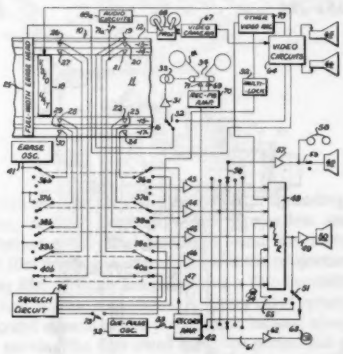
SYSTEM FOR DUBBING FRESH SOUND TRACKS ON MOTION PICTURE FILMS

Deloy J. White, Andes 51, 20 D.F., Mexico City, Mexico

Filed May 14, 1971, Ser. No. 143,503

Int. Cl. G03b *31/00*

U.S. Cl. 352—5 **7 Claims**



A motion picture produced in one language is provided with a sound track having dialog in another language. A video tape recording is made of the original motion pictue in synchronization therewith and the tape drives a television display while cue information is recorded on the tape, or marked

on the motion picture. The tape is played back, and the cue information is used to prompt the recording of the desired sound information, including the dialog in the other language. The recording of the sound information is done in segments and recorded along different laterally displaced longitudinal areas of the tape and juxtaposed to correspond to related image recording. When all of the dialog and other sounds correspond properly with the photographic material, the laterally displaced sound track segments are mixed and balanced to produce a continuous, properly-synchronized sound record. The synchronized sound track (in a new language) is then composed with the optical negative film of the original motion picture.

3,743,392

SYNCHRONIZATION MEANS FOR MOTION PICTURE PROJECTOR AND TAPE RECORDER

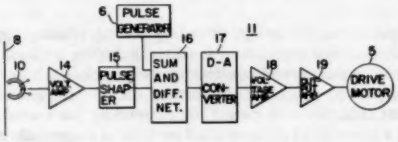
Saburo Numata, and Takashi Kagechika, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Filed Dec. 7, 1971, Ser. No. 205,621

Claims priority, application Japan, Dec. 14, 1970, 45/111586

Int. Cl. G03b *31/04*

U.S. Cl. 352—17 **4 Claims**



A motion picture is synchronized with the sound reproduced by a tape recorder. The drive motor of the motion picture projector is controlled by a D.A converter which is provided with a digital input representing the difference in number of pulses between the accumulated number of synchronization pulses generated respectively by the motion picture projector and the tape recorder.

3,743,393

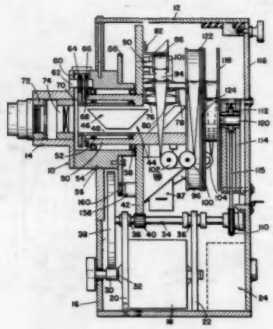
EPICYCLIC CAMERA

Rouel R. Campbell, 7064 E. 52nd St., Tulsa, Okla.

Filed Oct. 28, 1971, Ser. No. 193,406

Int. Cl. G03b *41/04*

U.S. Cl. 352—84 **21 Claims**



A high speed motion picture camera wherein the film moves continuously during a filming operation, and having an optical system through which the light passes continuously; hence, the epicyclic camera principle in which the film, the shutter and the image are in coordinated motion. The epicyclic camera may be utilized for taking substantially any number of pictures per revolution with good picture quality and superior picture steadiness.

3,743,394

METHOD FOR PRODUCING A SEQUENCE OF MOVING PICTURES AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

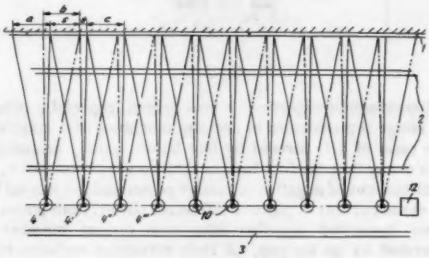
Robert Meszlenyi, Delsbergerallee 45, Basel, Switzerland

Filed Sept. 7, 1971, Ser. No. 178,073

Claims priority, application Switzerland, Sept. 11, 1970, 13526/70

Int. Cl. G03b *25/00*

U.S. Cl. 352—100 **11 Claims**



A method of, and apparatus for, producing a sequence of moving pictures, especially advertisements, with respect to an observer moving past such pictures, wherein a sequence of individual partial pictures containing a moving subject are projected adjacent one another along a given path of travel of the observer upon at least one projection surface. Each individual partial picture is forwardly advanced in synchronism with the remaining individual partial pictures in the direction of travel of the observer and through a predetermined path as a function of the speed of travel of the observer. The projection of each individual partial picture at the end of this predetermined path is interrupted, and thereafter there is again initiated the projection of the partial pictures at a projection starting position in such a manner that the observer receives the impression that the subject located upon the successive individual partial pictures is moving.

3,743,395

AUDIO-VISUAL PLAYBACK APPARATUS AND A SOUND AND PICTURE DISC ADAPTED THEREFOR

Heinz Preuss, Hannover, Germany, assignor to Pilot-Hydraulic GmbH, Zurich, Switzerland

Filed Apr. 27, 1972, Ser. No. 247,978

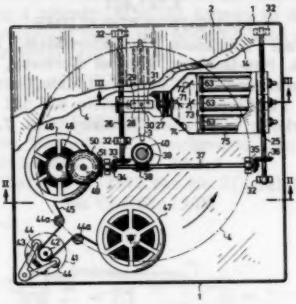
Claims priority, application Germany, Apr. 30, 1971, P 21 21 379.6

Int. Cl. G03b *25/00*

U.S. Cl. 352—103 **13 Claims**

An audio-visual playback apparatus for transparent picture images and sound recordings disposed in a spiral strip around the center of a disc which is rotatable at a constantly varying speed corresponding to a uniform playing speed. A pickup arm for a picture pickup is mounted on leadscrews on which the arm is advanced radially of the spiral and in synchronism with disc rotation. The pickup arm is located on one side of the disc, and a light source is mounted on the opposite side of the disc. A pickup head is mounted on the pickup arm to

pickup both sound and pictures from the disc and also control signals from a spiral control track which is parallel with the sound track on the disc. The control signals modulate magnetic fields to vary the position of the objective so as to maintain the image in proper focus.



3,743,396

CONTINUOUS FILM MOVEMENT MOTION PICTURE APPARATUS

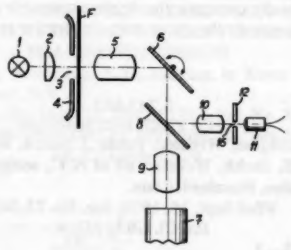
Giovanni Odone, La Rosiaz S/Lausanne, Switzerland, assignor to Bolex International S.A., Sainte-Croix (Vaud), Switzerland

Filed July 20, 1971, Ser. No. 164,305

Claims priority, application Switzerland, July 30, 1970, 11505/70

Int. Cl. G03b *41/10*

U.S. Cl. 352—109 **12 Claims**



The device includes a light source supplying several flashes on the passage of each frame of the film. A mirror provides several optical paths for the light rays to compensate for the movements of the film between flashes, and is actuated independently of the advance of the film and at a frequency several times higher than the rate of passage of the images. A detector of the relative momentary position between the compensating mirror and the position of the film activates a flash of the lamp for the positions in which the compensation is correct by way of an electrical gating circuit.

3,743,397

OPTICAL AND MAGNETIC READER FOR FILM EDITING MACHINES

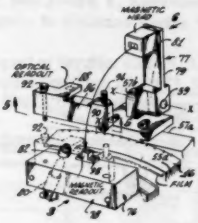
Walter F. Soul, 10354 McBroom St., Sunland, Calif.

Filed Feb. 28, 1972, Ser. No. 229,950

Int. Cl. G03b *21/00*

U.S. Cl. 352—129 **11 Claims**

A film editor with picture viewer, amplifier and speaker for synchronized viewing of film and auditing of sound track, by means of a motor driven synchronizer, provided with four gangs, each receiving picture and sound track via viewer and magnetic sound heads. The fourth of said gangs is provided with both an optical sound reader and a magnetic sound playback unit for reading of the audio stripe of single system film optically or magnetically.



The top portion of the optical reader contains a solar cell removable from its base portion. The base portion incorporates an optical lamp and focusing lens system which remains in precise alignment regardless of whether or not the upper portion of the optical sound reader is to be removed. The magnetic sound playback unit is adjustably mounted in a pivoting arm for precise adaptation to a sound track or complete removal therefrom when not utilized.

3,743,398

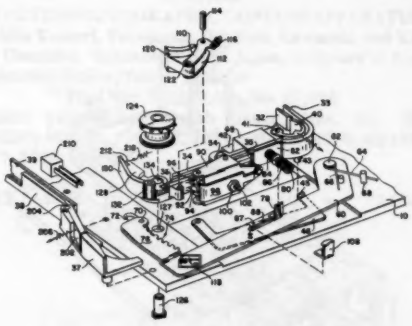
MOTION PICTURE PROJECTOR

Robert B. Johnson, and Fred N. Woodhouse, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,733

Int. Cl. G03b *1/56*

U.S. Cl. 352—157 **9 Claims**



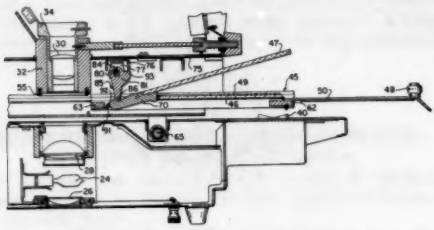
A motion picture projector having film threading, forward projection, reverse projection, still projection and rewind modes includes a projection gate and an intermittently operated film feeding member adjacent the projection gate for advancing film through the gate along a film threading path in forward and reverse directions. A rotary drive sprocket wheel for the sound system of the projector is located along the film path for moving the film away from the projection gate when the projector is in its forward projection mode. The film is prevented from engaging the sprocket wheel when the projector is in any but its forward projection mode. A loop former between the projection gate and the sprocket wheel provides a free loop of film between the gate and the wheel during forward projection while functioning as a film snubber during reverse projection.

3,743,399

MICROFORM READER COVER PLATE OPENING MECHANISM

Stephen B. Smith, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed July 21, 1971, Ser. No. 164,571
Int. Cl. G03b *21/14, 23/08*
U.S. Cl. 353—23 **12 Claims**



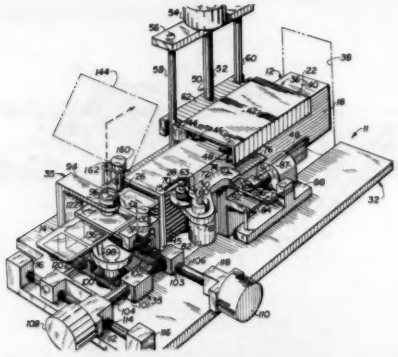
A mechanism for automatically opening the cover plate of a microform reader. The mechanism includes a spring-loaded toggle member riding on the cover glass and engageable with a slot portion of the cover glass to lift the glass for insertion and/or removal of a microform. The toggle member has a self-locking feature which prevents closing of the cover glass until it is moved rearwardly to rotate the toggle member.

3,743,400

FILM STRIP HANDLING APPARATUS AND METHOD

James O. Haning, Palo Alto; Bram Kool, Saratoga; Jules G. Moritz, Los Altos Hills, and Robert Mizrahi, El Cerrito, all of Calif., assignors to Microform Data Systems, Inc., Menlo Park, Calif.

Filed Dec. 24, 1970, Ser. No. 101,224
Int. Cl. G03b *23/08, 23/12*
U.S. Cl. 353—26 **10 Claims**



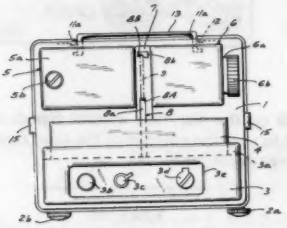
Apparatus and a method for handling and reading any one of a number of film strips, each having a number of segments with each segment containing a plurality of information-containing, high-reduction image frames. The film strips are housed in a cassette which is movable with respect to a fixed reference to align a desired film strip with a reading station disposed across the optical path of an optical system. A film strip is moved out of the cassette by a force applied to one of its side edges. Control information carried by each film strip is sensed as the film strip moves out of the cassette and the sensed information is used to control the distance through which the film strip moves so that a particular segment thereof will stop at the reading station. The optical system is moved relative to the reading system so that the optical path of the optical system is selectively alignable with a particular image frame of the film strip removed from the cassette.

3,743,401

PROJECTOR FOR SLIDES

Hans Werner Johannsen, Frankfurt/Main, and Robert Oberheim, Neu-Isenburg, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Sept. 5, 1969, Ser. No. 855,521
Claims priority, application Germany, Sept. 7, 1968, P 17 97 276.8
Int. Cl. G03b *21/18*
U.S. Cl. 353—52 **10 Claims**



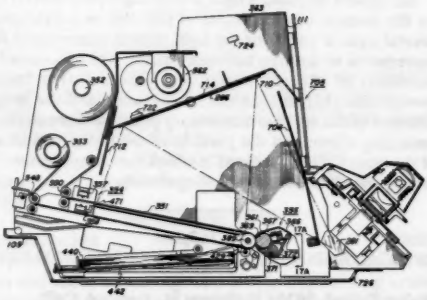
A slide projector wherein a block-shaped guiding and transporting unit supports indexible magazines for slides at a level below a block-shaped lamp-containing illuminating unit and a block-shaped objective-containing image projecting unit. The three units are mounted at one side of a vertical panel the other side of which supports the fan and the driving assembly for a vertically movable slide changer whose claws transport slides from a magazine on the guiding and transporting unit into registry with the other two units and vice versa. The housing of the projector comprises two separable shells one of which normally conceals the driving assembly and the other of which conceals the three units when the projector is not in use.

3,743,402

PAPER FEED MECHANISM

Robert E. Hughes, Webster; Frank J. Sanza, Rochester; and Charles E. Smith, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1970, Ser. No. 73,549
Int. Cl. G03g *15/14*
U.S. Cl. 355—3 **6 Claims**



Combination viewing and printing apparatus characterized by the capability of: producing a positive print form either a negative or a positive input film; printing on plain sheet paper which is fed from the apparatus at an optimum location; selecting the information to be printed from a microfilm trans-

ported by means of a differential drive arrangement which optimizes the film movement; accommodating various types of recording media, for example roll microfilm and microfiche; and presenting a plurality of image formats to the viewing screen and a recording media in a predetermined orientation convenient for viewing and printing.

3,743,403

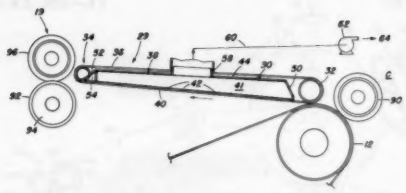
TRANSPORT ASSEMBLY

Frank J. Sanza, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 213,891

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **5 Claims**



A transport assembly for passing an image receiving member from a transfer station to a fuser assembly. The transport assembly is comprised of a belt assembly and a plenum chamber disposed within the belt assembly. An end section of the plenum chamber extends through one end of the belt assembly in juxtaposition to the nip of the fuser assembly to permit efficacious bridging of receiving members thereto.

3,743,404

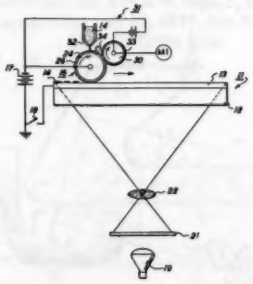
PHOTOELECTROPHORETIC IMAGING APPARATUS INCLUDING MEANS TO SIMULTANEOUSLY APPLY A COMPRESSIVE STRESS AND SHEAR STRESS TO THE IMAGING SUSPENSION

Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 764,721, Oct. 3, 1968, Pat. No. 3,595,772. This application Jan. 20, 1971, Ser. No. 108,149

Int. Cl. G03g *15/04*

U.S. Cl. 355—3 **18 Claims**



This invention relates to a method and apparatus for creating high shear stresses in a particulate suspension prior to use of such suspension for imaging or inking. The method and apparatus in one environment function to stress a thin layer of an electrophoretic suspension of particles in a liquid carrier. The prestressed suspension is better suited than unstressed suspensions for preparing both monchromatic and polychromatic copies from originals by particle migration through the suspension when it is exposed to electromagnetic radiation in image configuration while in an electric field across the suspension between two electrodes. The method and apparatus is also used for printing inks in order to form a prestressed, uniform, thin layer of the ink for application to the press.

3,743,405

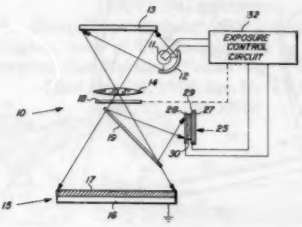
AUTOMATIC EXPOSURE CONTROL IN ELECTROPHOTOGRAPHY

Theodore H. Morse, and Joseph Y. Kaukeinen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 63,385, Aug. 13, 1970, abandoned. This application June 17, 1971, Ser. No. 154,117

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **5 Claims**



An exposure control device adapted for use in electrographic copiers. The device comprises a radiation-sensitive control element fabricated from the same radiation-sensitive material as that which comprises the radiation-sensitive layer of the electrographic recording plate, thereby assuring proper plate exposure regardless of changes in the spectral distribution of energy emanating from the illuminated original or in the electrographic plate speed as the ambient operating temperature varies.

3,743,406

ELECTROPHOTOGRAPHIC COPYING APPARATUS

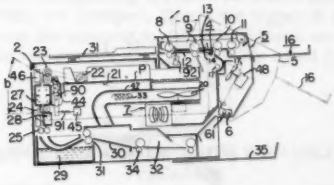
Shigehiro Komori, Yokohama; Jiro Sato, Kawasaki, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,098

Claims priority, application Japan, Nov. 11, 1969, 44/90247; Nov. 11, 1969, 44/90248; Mar. 6, 1970, 45/19496; Sept. 7, 1970, 45/77832

Int. Cl. G03g *15/00*

U.S. Cl. 355—8 **2 Claims**

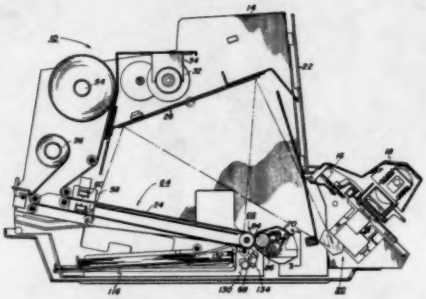


A compact and light-weight electrophotographic copying apparatus which includes an original feeding table and a photosensitive paper supply table both disposed within a machine housing in the upper portion thereof, means for transporting an original toward an original illuminating station, means for feeding sheets of photosensitive paper from said paper supply table in synchronism with the movement of the original and transporting the sheets to an exposure station optically connected to said illuminating station through an optical system, whereby the original is electrophotographically copied on the sheets of photosensitive paper in succession without any trouble or malfunctioning during operation.

3,743,407
COMPENSATING CAM FOR USE IN A COPYING MACHINE FOR SYNCHRONIZING THE OPERATION BETWEEN A DEVELOPER APPLICATOR AND AN IMAGING SURFACE

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1970, Ser. No. 73,518
Int. Cl. G03g 9/04
U.S. Cl. 355—10 2 Claims

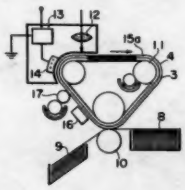


A development system comprising a modular developer unit engageable with an image bearing surface for development of the image and disengageable therefrom during other portions of the operation cycle. The modular developer unit contains within the housing structure thereof, developer feed and doctoring structure for presenting appropriate quantities of developer material to an applicator surface also contained in the housing structure but protruding from an opening therein. The developer system further comprises a cam arrangement and synchronizing structure for timely movement of the applicator surface into and out of contact with the image surface in accordance with a predetermined sequence of operation.

3,743,408
ELECTROSTATIC PRINTING METHOD AND APPARATUS

Genji Ohno, 26-37 Horiguchi, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Feb. 10, 1972, Ser. No. 225,052
Claims priority, application Japan, Feb. 12, 1971, 46/5591
Int. Cl. G03g 9/04
U.S. Cl. 355—10 8 Claims

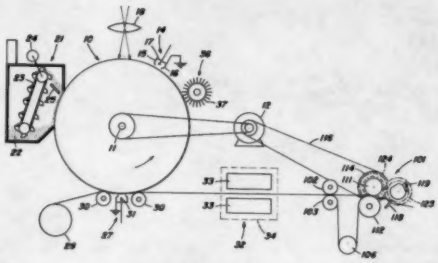


Apparatus is disclosed for electrostatic printing, including a photosensitive plate, composed of a conductive substrate having fine pores distributed uniformly all over the surface thereof and a liquid-repellent photoconductive layer coating the surface of the substrate except the part of the pores. An electrostatic latent image is formed on the surface of the photosensitive plate, and a liquid developer is applied to the back side of the plate. The developer is prevented from exuding on that portion of the plate where said latent image does not exist due to the liquid-repellent property of the photoconductive layer. Conversely, the developer is received by those portions of the surface of the plate where the latent image exists due to decrease of contact angle in that part of the image. Finally, a paper is press-contacted onto the surface of the plate to transfer the image of exuded developer to the paper by the absorbing force of the paper.

3,743,409
CUTTER ASSEMBLY

Joseph Fantuzzo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 11, 1971, Ser. No. 152,097
Int. Cl. G03g 15/00
U.S. Cl. 355—13 8 Claims

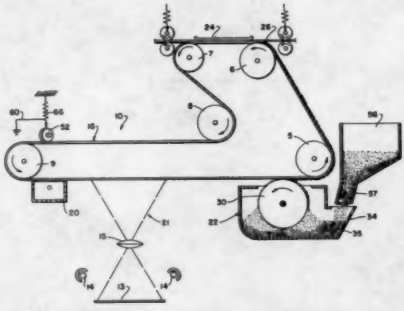


Cutter assembly for an electrostatographic machine using a continuous web of transfer material in which the metering web of the cutter assembly is driven by the drive for the drum of the machine and the cutter is driven by the metering roll. In response to an increase in web tension, the metering roll is allowed to slip with respect to the drum to relieve tension, thereby providing uniform web tension without affecting the accuracy of the cut.

3,743,410
GROUNDING APPARATUS FOR ELECTROGRAPHIC COPY APPARATUS

Robert Irwin Edelman, and John Peter Swapceinski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 285,963
Int. Cl. G03g 15/00
U.S. Cl. 355—15 2 Claims



In electrographic apparatus employing a replaceable movable photoconductive member having a conductive layer, a photoconductive layer and an imbibed strip in the photoconductive layer connected to the conductive layer, a conductive rotatable member provides a continuous electrical path to a point of reference potential from the conductive layer through the imbibed conductive strip by having a line of contact with the top surface of the imbibed strip. The rotatable member is disposed so that its axis of rotation is skewed with respect to

the velocity vector of such line of contact whereby a scrubbing force is imparted to the strip surface to clean it and thereby maintain a good electrical connection between the strip and the conductive rotatable member.

3,743,411

ELECTROGRAPHIC RECORDING METHOD AND DEVICES FOR PERFORMING THIS METHOD

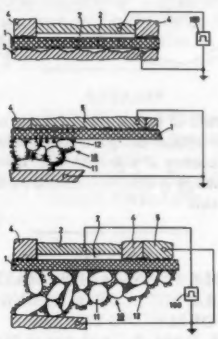
Gerhard Krekow, Hamburg; Jurgen Schramm, Norderstedt, and Klaus Witter, Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,764

Claims priority, application Germany, Jan. 15, 1971, P 21 01 770.9

Int. Cl. G03g *13/00*

U.S. Cl. 355—17 **13 Claims**



A method of electrographic recording, in which charge images are formed by image electrodes on one side of a record carrier, the images being developed on the other side of the record carrier. The (conducting) developer also serves as the counter electrode during the formation of the charge images.

3,743,412

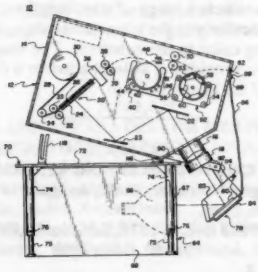
APPARATUS FOR RECORDING IMAGES APPEARING ON A DISPLAY SURFACE

John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 854,870, Sept. 3, 1969, abandoned. This application July 13, 1971, Ser. No. 162,284

Int. Cl. G03b *5/00*

U.S. Cl. 355—18 **9 Claims**



Improved apparatus for recording and reproducing copies of images displayed upon the display surface of devices such as a Cathode Ray Tube. The improved apparatus includes a camera assembly mounted adjacent a display device, support means movable from a retracted position wherein the display surface is cleared for unobstructed viewing thereof to an extended position wherein a reflecting surface carried by the support means can be adjusted to direct images from the display surface to lens means incorporated in the camera assembly. The lens means, in turn, forms the received images on recording material suitably arranged within the camera assembly.

The improved apparatus further includes a flexible light shield cooperatively associated with the movable support means, the display surface and the lens means for preventing ambient light from impinging upon the lens means when the reflecting surface has been moved by the support means to the extended position.

3,743,413

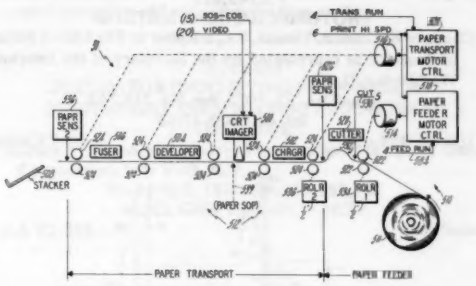
PRINTER/PLOTTER SHEET TRANSPORT WITH WEB CUTTING MEANS

David L. Sharp, New Britain, and Douglas P. Modeen, Southington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 26, 1970, Ser. No. 67,168

Int. Cl. G03b *29/00*

U.S. Cl. 355—29 **3 Claims**



Paper from a continuous roll is fed into a loop by first rollers at a given speed and out of the loop by second rollers at a lower speed, the first rollers are stopped to permit tear-free cutting of the paper into sheets after the first rollers have rotated sufficient times to pass a length of paper equivalent to the desired length of sheet indicated by controllable settings. Restarting of the first rollers is timed to permit successive sheets to pass to the second rollers with a minimum, selectible intersheet spacing. Individual jam detection, for several sheets concurrently within the transport, is effected by utilizing a shift register to shift bits inserted therein in timed relation with the passage of related sheets, successive bits concurrently in the register corresponding to related successive sheets concurrently within the transport. Sheets are logged in and logged out to cause the transport to run until all sheets are clear. The above features are provided in a variable speed paper transport.

3,743,414

REPRODUCTION CAMERA WITH VARIABLE IMAGE SCALE

Kurt Kirchhoff, Hamburg-Lurup, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Germany

Filed Oct. 18, 1971, Ser. No. 190,224

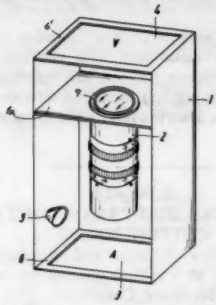
Claims priority, application Germany, Oct. 17, 1970, P 20 51 122.2

Int. Cl. G03b *27/68*

U.S. Cl. 355—52 **18 Claims**

A fixed-focus camera with spherically effective front and rear lens groups has two pairs of prisms inserted between these lens groups, each pair of prisms being adjustable by means of a respective setting ring for varying the image scale either anamorphotically or orthomorphotically. For orthomorphotic variation, the settings rings may be coupled for joint displace-

ment while the optically effective planes of the prism pairs are mutually perpendicular; for maximum anamorphotic variation, one pair of prisms may be rotated through 90° about the optical axis.

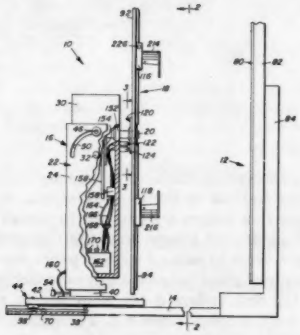


3,743,415

PHOTOMECHANICAL METHOD

Clarence R. Gilman, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D. C.

Filed Jan. 21, 1972, Ser. No. 219,742
Int. Cl. G03b 27/68
U.S. Cl. 355—52 7 Claims



Photomechanical apparatus and procedures are applied to obtain controlled manipulations of image representations having particular utility in topographic mapping including slope mapping, relief shading, and symbol discrimination. Negative and positive transparencies are made photographic copy in the apparatus for enabling production of enhanced and reduced versions of representations, respectively. Spaced beams from revolving light sources are directed to pass through such copy so as to expose photographic film materials maintained spaced from the copy. Selective adjustments of light spacing and dispositions, and exposure limits in the apparatus adapt it for use in differing procedures.

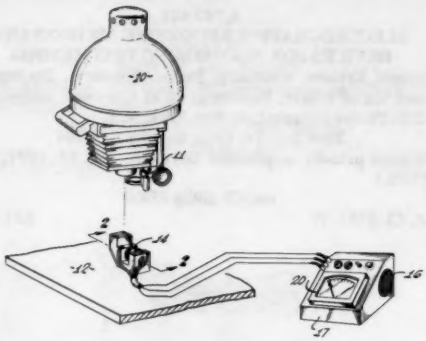
3,743,416

OPTICAL IMAGE FOCUSING DEVICE WITH AUDIBLE INDICATION

J. Arthur Widmer, Hollywood, and Richard J. Stumpf, Woodland Hills, both of Calif., assignors to MCA, Inc., Universal City, Calif.

Filed Aug. 30, 1971, Ser. No. 175,925
Int. Cl. G03b 27/34
U.S. Cl. 355—56 11 Claims

An electronic device for indicating the degree of focus of an optically formed image via an audible tone. An optical image, of unknown degree of focus, is directed upon a photoconductive semiconductor cell. The cell's electrical conductance is a function of the degree of focus of the optical image which is formed on its surface. An audio tone is generated having a frequency dependent upon the cell's conductance, providing an audible indication of the degree of focus of the image. The focal plane of the optical image is adjusted until the audible tone frequency reaches a maximum or minimum value, indicating that the image is sharply focused on the surface of the photoconductive cell.

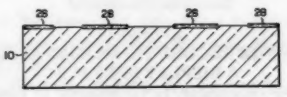


3,743,417

DURABLE TRANSPARENT MASK FOR PHOTOLITHOGRAPHICAL PROCESSING AND METHOD OF MAKING THE SAME

Charles J. Smatlak, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 844,141, July 23, 1969, abandoned. This application July 13, 1971, Ser. No. 162,038
Int. Cl. G03b 27/28
U.S. Cl. 355—125 6 Claims



An indefinitely reusable transparent mask suitable for photolithographic uses, particularly for the production of semiconductor elements preferably embodies a visually transparent image fused at least part way into a durable transparent substrate such as glass. The image being of a material capable of absorbing a selected range of wavelengths of the light spectrum, and particularly in the ultraviolet range, the image being of a contrasting color to the substrate. The image may also be visually opaque provided it at least absorbs a desired range of wavelengths of the light spectrum.

3,743,418

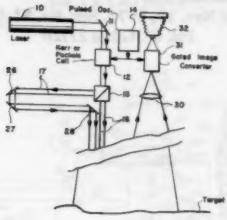
CONTOUR MAPPING SYSTEM

Lee O. Heflinger, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1970, Ser. No. 95,808
Int. Cl. G01c 3/08
U.S. Cl. 356—5 2 Claims

A system for creating a topographical map of a terrain. The terrain is periodically illuminated by high-intensity light pulses. The light reflected by the terrain is gated in synchronism with the transmitted pulses. Accordingly, certain elevated areas will return light pulse echos which are gated out at the receiver so that dark contour lines appear on the map of the terrain. The light pulses may be generated by passing continuous light through an electronic shutter which may consist of a

Pockels or Kerr cell followed by a light polarization selective element which passes light only of a certain plane of polarization. Alternatively, a mode-locked laser may be used as a light

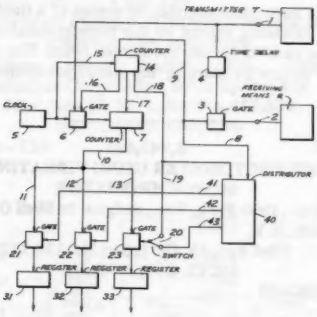


source. The light at the receiver may be similarly gated by an electronic shutter, such as a gated image converter or a Kerr cell, used in conjunction with polarizers.

3,743,419
RANGING SYSTEM

Lars-Erik Skagerlund, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed July 9, 1969, Ser. No. 840,276
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **7 Claims**



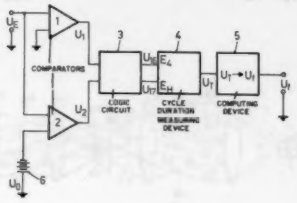
A radiated-signal reflector ranging system comprising a time measuring device which is started upon the transmission of a signal, and a plurality of registers connected over gates and read-out lines to the time measuring device. The gates are normally closed and are momentarily opened in turn in response to incoming reflected signals, thereby causing the times of arrival of the reflected signals to be recorded in the registers.

3,743,420
METHOD AND APPARATUS FOR MEASURING THE PERIOD OF ELECTRICAL SIGNALS

Paul Iten, Oberrohrdorf, and Jiri Mastner, Niederrohrdorf, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 23, 1971, Ser. No. 183,100
Claims priority, application Switzerland, Sept. 25, 1970, 14244/70
Int. Cl. G01p *3/36*; G01r *23/02*
U.S. Cl. 356—28 **19 Claims**

The present method and apparatus measures the cycle duration of electrical signals by deriving through logic circuit means a time marker signal and a control signal from said electrical signals. The time marker signal is produced when the electrical signal passes through zero and if the electrical signal amplitude has exceeded a predetermined level during the half period just prior to said zero passage. The time marker signal indicates the number of cycles which have exceeded that level. The control signal indicates the total duration of said signals which have exceeded said level. The cycle duration of the time marker signal may then, for example, be deter-

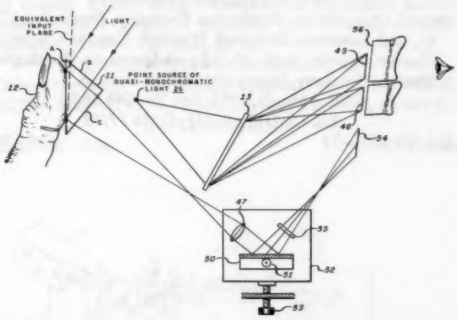


mined in a counter which is switched on and set back to zero by the control signal. Alternatively, it is possible to determine the duration of a number of input signal periods from the control signal with the aid of the time marker signal. The present method and apparatus are especially useful for increasing the spacial resolution of Laser-Doppler flow probes.

3,743,421
SYSTEM FOR IDENTIFYING PERSONNEL BY FINGERPRINT VERIFICATION AND METHOD THEREFOR

William T. Maloney, Sudbury, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 2, 1971, Ser. No. 159,382
Int. Cl. G06k *9/08*; G01b *11/24*
U.S. Cl. 356—71 **18 Claims**



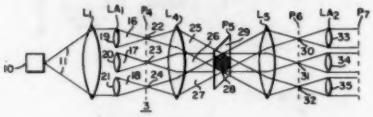
An optical recognition device which employs a source of incoherent quasi-monochromatic light for illuminating an input prism upon which a fingertip to be verified as that of a particular individual is pressed. Reflected incoherent illumination from the prism is passed through a hologram selected from a library of holograms which contains interference patterns produced from the fingertip or an impression of the fingertip of the particular individual. An intensity output signal provided at the hologram output is directed to a discriminator which passes the central value signal of the intensity output signal and a detector responsive to the central value of the intensity signal provides an electrical current output which is coupled into a signal processor. The signal processor has threshold levels which correspond to values of electrical current signals required to establish correspondence between the reflected incoherent illumination from the input prism with the fingertip pressed against it and the interference patterns contained in the hologram. The signal processor produces an output signal which indicates correspondence between the fingertip pressed against the input prism and the fingertip represented by the interference patterns.

3,743,422

OPTICAL IMAGE PROCESSOR

Wilbur R. Wood, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 18, 1970, Ser. No. 47,298
Int. Cl. G06k 9/08
U.S. Cl. 356—71 10 Claims



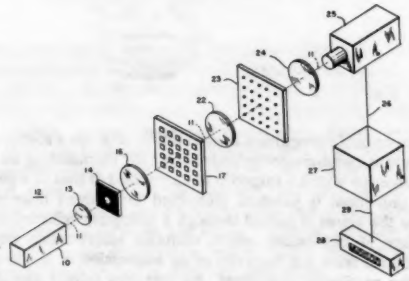
A processing array which permits the simultaneous filtering of a single input image by a number of different spatial frequency filters. A coherent collimated beam of light is divided into a plurality of smaller beams. The smaller beams are then collimated and are directed through a single portion of an input transparency. The beams coming from the input transparency are then directed through a transforming lens which produces the Fourier transform of each of the beams in the focal plane of the transforming lens. Because the Fourier transform of each beam is located at a different position in the Fourier plane, a different filtering operation can be performed at each of the points in the Fourier plane.

3,743,423

INTENSITY SPATIAL FILTER HAVING UNIFORMLY SPACED FILTER ELEMENTS

Robert Alfred Heinz, Flemington Township, Hunterdon County, and Laurence Shrapnell Watkins, Hopewell Township, Mercer County, both of N.J., assignors to Westinghouse Electric Company, Incorporated, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,985
Int. Cl. G01n 21/32; G02b 27/38
U.S. Cl. 356—71 6 Claims



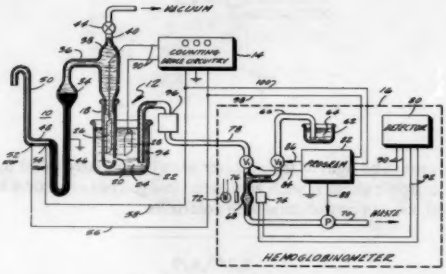
A spatial filtering system for inspecting integrated circuit photomasks, and the like. The system includes a spatial filter comprising a matrix-like array of opaque regions on a transparent field. The region-to-region spacing on the filter is uniform and greater than that which results if it is assumed that the lens is perfect and generates an exact Fourier transform at its back-focal plane. As a result, high-frequency spatial information, corresponding to the edges of the photomask features, is suppressed improving the signal-to-noise ratio of the system.

3,743,424

COMBINED ELECTRONIC AND OPTICAL METHOD AND APPARATUS FOR ANALYZING LIQUID SAMPLES

Wallace H. Coulter, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Nov. 19, 1970, Ser. No. 91,130
Int. Cl. G01n 21/26
U.S. Cl. 356—73 14 Claims



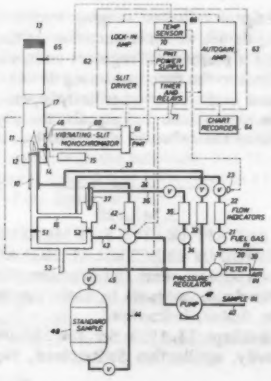
An electronic particle counting device operating on the Coulter principle is combined with an optical hemoglobinometer such that at some step in the sequence of events of the operation of the counting device, the operation of the optical hemoglobinometer is started. The same sample suspension that is utilized in the counting device is also utilized in the hemoglobinometer by means of a fluid connection from the counting device to the hemoglobinometer so that there is no need to handle the sample twice. The action of the counting device in starting the hemoglobinometer is automatic.

3,743,425

FLAME PHOTOMETER USING VIBRATING SLIT MONOCHROMATOR

John D. Jobe, Dear Park, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,173
Int. Cl. G01j 3/36, 3/42
U.S. Cl. 356—87 9 Claims



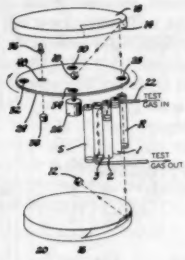
A flame photometer for use in monitoring processes wherein the fuel gas and/or sample produce a high background emission spectrum and a monochromator for detecting the signal of interest with the background being removed by filtering the signal with a vibrating slit in the monochromator. The system also includes a means for automatic standardization of the recorded signal.

3,743,426

MULTICHANNEL EXHAUST GAS ANALYZER

Martin Steinberg, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,492
Int. Cl. G01j 3/42
U.S. Cl. 356—96 2 Claims



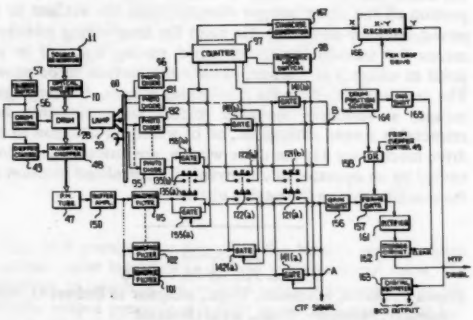
The exhaust gas to be monitored is passed through a plurality of adjacently positioned serially connected absorption cells of varied length. A chopper wheel carrying a plurality of spectral filters sequentially passes radiation from a source at discrete wave-lengths each cell in sequence. The amount of radiation absorbed by the gas is detected to determine the concentrations of certain components in the gas.

3,743,427

MODULATION TRANSFER FUNCTION MEASUREMENT SYSTEM AND METHOD

Sidney Weiser, Silver Spring, Md., assignor to Weiser/Robodyne Corporation, Silver Spring, Md.

Filed June 29, 1971, Ser. No. 157,834
Int. Cl. G01b 9/00, 5/36
U.S. Cl. 356—124 23 Claims



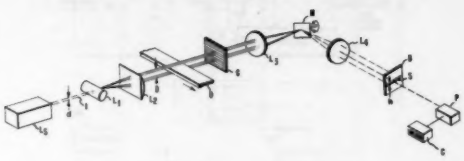
A constant speed rotating drum having a plurality of circumferentially spaced bar patterns of different discrete spatial frequencies is employed to measure the modulation transfer function (MTF) of a lens or other optical unit under test. A slit image input is degraded by the unit under test which thereby produces a spread function in its output plane. The spread function is scanned by a bar pattern and detected by a photosensor to provide an electrical square wave signal which is distorted to a degree determined by the spread function. Each bar pattern generates a different square wave frequency which is passed by a respective narrow bandpass filter tuned to its fundamental frequency. Each filter is gated on only when its associated bar pattern is rendered operative to scan the spread function. The amplitude of the passed fundamental frequency is then detected as a measure of the MTF. Scanning by the bar pattern may be at either the input or output of the unit under test.

3,743,428

DEVICE FOR OPTICALLY MEASURING A DIMENSION OF AN OBJECT

John B. Brown, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 4, 1971, Ser. No. 168,952
Int. Cl. G01b 11/02
U.S. Cl. 356—160 5 Claims



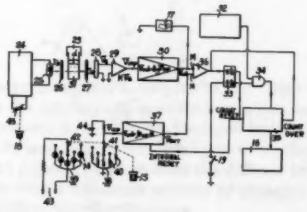
An apparatus for measuring a dimension of a physical object and comprising means for producing a collimated beam of light having a dimension at least as large as acceptable variations in the dimension of the object being measured, means for dividing the collimated beam of light into spatial digits, and means for counting the digits of light, the latter means spaced from the light beam source sufficiently to accommodate therein between the portion of the object to be measured.

3,743,429

COLORIMETER FOR MEASURING CONCENTRATION AND INDICATING THE CONCENTRATION AS A DIGITAL QUANTITY

Shoji Kawai, Kyoto, Japan, assignor to Kabushiki Kaisha Kyoto Daiichi Kogaku, Kyoto-fu and Chugai Seiyaku Kabushiki Kaisha, Tokyo-to, Japan

Filed May 17, 1971, Ser. No. 143,901
Claims priority, application Japan, May 18, 1970, 45/42294; May 18, 1970, 45/42295; May 19, 1970, 45/43124
Int. Cl. G01j 3/50
U.S. Cl. 356—180 11 Claims

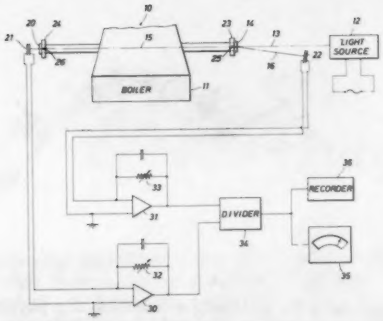


A colorimeter for testing specimens such as blood samples in order to measure the concentration of a material in the specimen and indicate the concentration as a digital quantity. The specimen which is to be tested is supported at a test position, and a signal-producing structure coacts with the specimen at the test position for producing therefrom a signal indicative of the concentration of a given material in the specimen. An analog-digital transducer receives the signal and converts it into a digital quantity, the magnitude of which is indicative of the concentration. An indicator is connected to the transducer for indicating the digital quantity determined by the transducer.

3,743,430
LIGHT TRANSMISSION MONITOR

William A. Riggs, Pasadena, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 12, 1971, Ser. No. 198,288
Int. Cl. G01n 21/12
U.S. Cl. 356—207 5 Claims

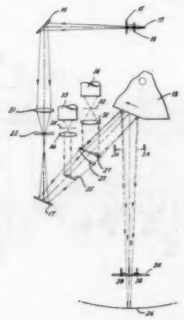


An opacity monitor for measuring the light transmissibility of gases in a furnace stack wherein a collimated light source is directed through the stack, a pair of photocells disposed to measure respectively the intensity of the source and the intensity of the light after it passes through the stack, the two measurements being balanced for normal conditions and the ratio of the two measurements being used as an indication of the opacity of the stack gas.

3,743,431
RADIATION SENSITIVE MEANS FOR DETECTING FLAWS IN GLASS

Charles J. Cushing, Churchville; Kurt C. Schwind, and Richard D. Vander Neut, both of Philadelphia, all of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 9, 1972, Ser. No. 251,832
Int. Cl. G01n 21/32
U.S. Cl. 356—239 9 Claims

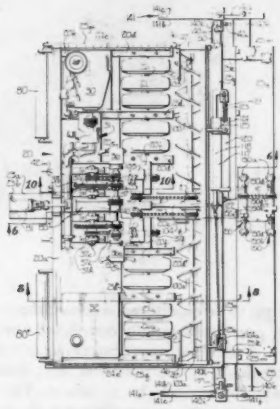


Apparatus for detecting flaws in a continuously moving ribbon of float-formed glass, comprising optical elements constructed and arranged to direct scanning beams of light through the glass ribbon, and which, in combination with associated discriminating means, afford a system which detects discrepancies in the transmission of light in the region of a flaw contained in the glass. In addition to the optical elements, the apparatus comprises a flaw marking unit and a control unit. Information as to the exact nature (e.g. wave, ream, bubble, and viscous lump) and location of marked flaws in the inspected glass may be stored in a computer, in the order of severity of the flaw.

3,743,432
AUTOMATED PAVING MACHINE

Billy R. Lee, P.O. Box 8433, Charlotte, N.C.

Filed Aug. 9, 1971, Ser. No. 170,109
Int. Cl. E01c 19/48
U.S. Cl. 404—84 12 Claims

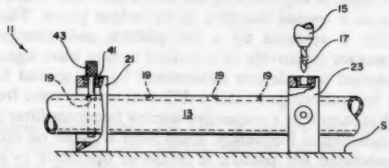


A compact self-propelled paving machine whose hopper, for receiving asphalt or other paving material therein, discharges the paving material rearwardly of the supporting drive wheels of the machine and directly upon the surface to be paved. The drive wheels, as well as motive means and drive mechanism connecting the motive means to the drive wheels, are so compactly arranged that the hopper substantially entirely overlies the same. Such compact construction facilitates positioning a standard size dump truck, or a larger so-called tandem-wheel dump truck, in such close proximity to the hopper that the paving material can be dumped directly from the truck bed into the hopper and discharged from the lower portion of the same hopper directly upon the surface to be paved, thereby obviating the need for intervening conveyor means for transferring the dumped paving material to the point at which it is discharged onto the surface to be paved. The machine also includes distributing augers, discharge gate means, a vertically movable screed and extensible and retractable screed extensions, all of which, in addition to the drive mechanism for the drive wheels, are automatically controlled by an operator at a convenient centralized location on the machine during the paving operation.

3,743,433
DRILL JIG APPARATUS

James P. Smith, Memphis, Tenn., assignor to Robert O. Manspeaker, Memphis, Tenn., a part interest

Filed July 19, 1971, Ser. No. 163,903
Int. Cl. B23b 49/00
U.S. Cl. 408—72 2 Claims



An apparatus for holding a workpiece, e.g., a rod or conduit, in working proximity with a drill press or the like so that a

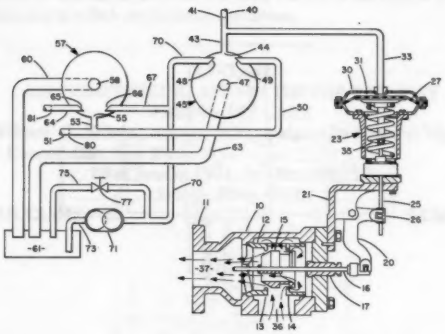
plurality of precision aligned transverse holes may be drilled along the length of the workpiece with further assurance that the center line of the holes are coincident with a single longitudinal radial plane of the workpiece. The apparatus includes a substantially identical pair of alignment blocks having apertures therein for receiving the workpiece, i.e., one being a "reference" block and the other being a "slidably adjustable" block. The reference block includes structure for engaging and rigidly holding the workpiece. The adjustable block includes a plurality of accurately positioned drill guides of different sizes and is adapted to be positioned along the length of the workpiece at predetermined locations thereon for drilling the plurality of holes therein, i.e., regardless of the location at which the adjustable block is placed along the workpiece the centerline of the appropriate drill guide will consistently be accurately positioned for drilling the above-described precision aligned holes, providing the reference and adjustable blocks are resting upon a planar surface.

3,743,434

FLUID OPERATED TURBINE SPEED CONTROL

Carl H. Geary, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,512
Int. Cl. F01b *25/06*
U.S. Cl. 415—30 **4 Claims**



The fluid pressure for operating the turbine speed control governor valve is varied by a fluid vortex control valve, the operation of which is controlled by means responsive to the variable output pressure of a fluid pump operated by the turbine. In the preferred embodiment, the control means includes a second fluid vortex control valve. The action of the second vortex control valve impressed on the first vortex valve greatly increases the sensitivity of the speed control mechanism, increasing the speed of the opening and closing of the governor valve to maintain a more close turbine speed control under varying load conditions.

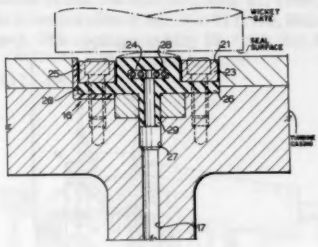
3,743,435

SEAL MANUFACTURE AND ASSEMBLY

Robert Stanley Sproule, and Flodor Kanger, both of Montreal, Quebec, Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Sept. 3, 1971, Ser. No. 177,703
Int. Cl. B63h *1/06*
U.S. Cl. 415—163 **1 Claim**

The inlet to a hydraulic turbine having variable wicket gates arranged to completely close-off the inlet when fully closed, is provided with seals set in the housing for expansion into sealing contact with the ends of the gates. The seal housings are self draining, to preclude extrusion of and damage to the seals.

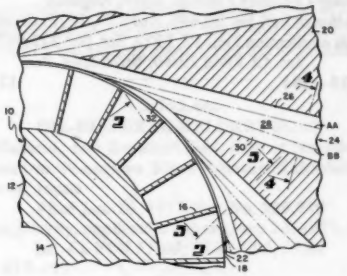


3,743,436

DIFFUSER FOR CENTRIFUGAL COMPRESSOR

John A. O'Connor, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed July 13, 1971, Ser. No. 162,242
Int. Cl. F04d *21/00, 29/44*
U.S. Cl. 415—181 **1 Claim**



The disclosure illustrates a diffuser of the "pipe diffuser" type in which the intersecting inlet flow passages are formed by the volume swept by a cylinder displaced from a first position in which its longitudinal axis is tangent to a reference circle to a second position. This enables the diffuser to handle a given flow rate with a minimum number of passages and provide increased flow range for the stage.

3,743,437

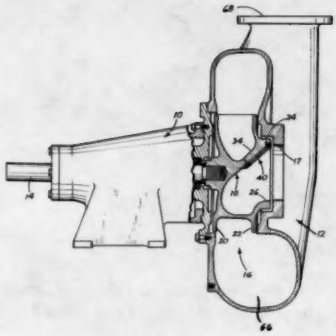
PUMP IMPELLER WITH SKIRT

Clinton C. Warren, Vancouver, Wash., assignor to Cornell Manufacturing Company, Portland, Oreg.

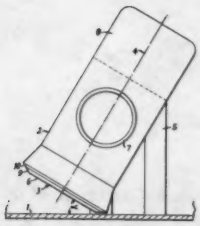
Filed Apr. 14, 1972, Ser. No. 244,126
Int. Cl. F04d *7/00, 29/02*
U.S. Cl. 415—197 **9 Claims**

A centrifugal pump including a volute casing housing an impeller. The impeller has an open eye and a vane spirally curving about said eye from lead to trailing edges in the vane. The vane further includes an elastomer skirt in the region of the leading edge, bounded by an edge which forms the leading edge of the vane. The skirt is reinforced at opposite of axially oriented extremities of said edge, but is unsupported between said opposite extremities in a yieldable throat region which ex-

tends along the vane in the direction of the trailing edge of the vane. Radially yieldability is introduced permitting the vane to give with the vane entering material being pumped and upon striking an obstruction.



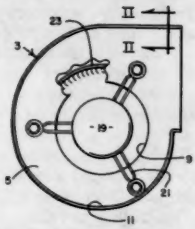
3,743,438
TRANSFER PUMPS
Harold Edward Sydney Colliver; Gerald Eric Boby, and Dennis Dewhurst Farmer, all of Ilford, England, assignors to The Plessey Company Limited, Ilford, England
Continuation of Ser. No. 30,698, April 22, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,567
Int. Cl. F04d *29/40*; B67d *5/48*
U.S. Cl. 415—204 **12 Claims**



In order to enable a fuel transfer pump constructed as an axial-flow impeller pump to remain effective to a very low fuel level in a tank, the axis of the pump is arranged at an angle to the vertical so that the impeller inlet face forms an angle with the tank bottom. Preferably the impeller projects below the lower end of a shroud housing, the edge of the projecting impeller portion and the end surface of the shroud is tapered to have a tangential plane parallel to the tank bottom.

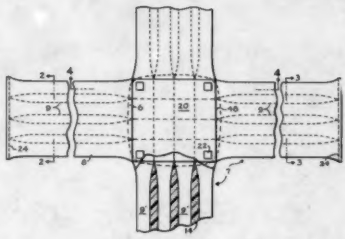
3,743,439
CENTRIFUGAL FAN ASSEMBLY
Peter L. Cann, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Apr. 30, 1971, Ser. No. 139,070
Int. Cl. F04d *29/40*
U.S. Cl. 415—206 **1 Claim**

A centrifugal fan assembly including a housing having side plates with flanges formed thereon, the flanges providing recesses for insertion therein of the housing wrapper, the



wrapper being secured in the flange recesses by deformation of portions of the flanges into the plane of the wrapper.

3,743,440
ROTARY, TUBULAR IMPELLER
Alvin Edward Moore, 916 Beach Boulevard, Waveland, Miss.
Continuation-in-part of Ser. No. 822,199, May 6, 1969, Pat. No. 3,559,923. This application Jan. 18, 1971, Ser. No. 107,101
Int. Cl. B64c *27/46*
U.S. Cl. 416—84 **27 Claims**

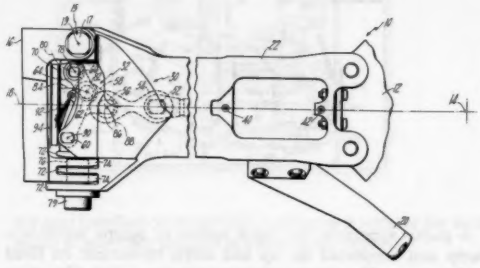


A helicopter, autogyro, windmill or other impeller, comprising blades, optionally resilient or substantially rigid, each having: a tip free of attachment to other blades and urged into extended position by centrifugal force; and blade-strengthening tubular members containing gaseous material, imbedded in foam plastic. Each tubular member may be: an elongated flat-ended tube or can; or a row of end-joined tubes or cans. The gaseous material may be: helium, air or other gas (preferably strongly pressurized); gas-cell-containing foam plastic; or other, gas-containing material. The preferably hinged form of the impeller comprises at least one aligned pair of blades (two pairs being shown), each pair comprising inflated tubes extending from one end of the blades to the other end, having walls of: thin ductile or resilient metal (preferably lead), optionally coated with rubber-impregnated fabric or with rubber or other resilient plastic; plastic-coated fabric; resilient plastic; glass; or the like. Each tube has flattened and sealed ends and a flattened middle portion clamped by a plate to the impeller shaft, providing flexible, integral hinges at this middle portion permitting tilting of the blades, balancing centrifugal and aerodynamic forces on each side of the rotary shaft. The flat-ended tubes are preferably flanked by blade-stiffening tubular members - preferably rows of metal cans, end-joined by preferably resilient plastic. When the tubular members are of plastic or glass they optionally may be blow-molded or centrifugally molded.

3,743,441
HELICOPTER BLADE FOLDING AND LOCKING MECHANISM

Donald L. Ferris, Newtown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 2, 1971, Ser. No. 194,881
Int. Cl. B64c 27/50
U.S. Cl. 416—143 14 Claims

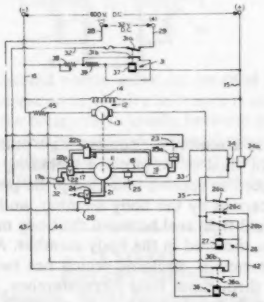


A power piston actuates a series of link members which are pivotally interconnected and which are also pivotally connected to the rotor hub and the blade so that actuation of the power piston will actuate said links to cause said blade to move to its folded position and to be locked in the folded position due to a link over-center condition.

3,743,442
AIR COMPRESSING APPARATUS FOR RAILWAY PASSENGER CARS

William G. Wilson, Adams, N.Y., assignor to General Signal Corporation, New York, N.Y.

Filed June 4, 1971, Ser. No. 150,053
Int. Cl. F04b 49/00
U.S. Cl. 417—12 9 Claims

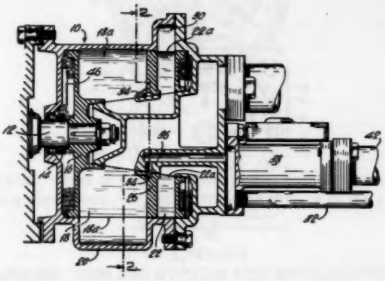


The disclosure concerns air compressing apparatus for railway passenger cars which incorporates a continuously running, wet rotor, screw type air compressor driven by a DC shunt motor supplied with electrical power from the third rail. The drive motor is protected against damage from overloads and power interruptions, but the apparatus keeps the motor in operation as long as possible during the momentary interruptions in power attributable to rail gaps. The mechanism is adapted to utilize commercially available components, and, where possible, the controls for the compressor and its drive motor preferably are operated at the low voltage level of the car's battery.

3,743,443
VACUUM PUMP

Irving C. Jennings, c/o Nash Engineering Co., South Norwalk, Conn.

Continuation of Ser. No. 853,618, Aug. 22, 1969, abandoned, which is a continuation of Ser. No. 711,370, March 7, 1968, abandoned. This application May 28, 1971, Ser. No. 145,462
Int. Cl. E04c 19/00
U.S. Cl. 417—68 4 Claims

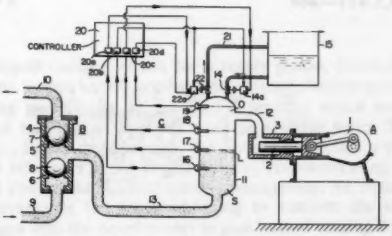


A multi-stage vacuum pump of the liquid ring type having a cold water seal around the inner ring of the water seal and introduced into a groove between successive stages and adjacent to the inner edges of the impeller. The pump is additionally provided with a novel air discharge system for successive stages incorporating a check valve and a deflection blade for the cooling the packing gland about the rotor shaft.

3,743,444
OIL-DIAPHRAGM SLURRY PUMP

Toshio Kazama, and Kazunori Seki, both of Nagaoka, Japan, assignors to Tamagawa Kikai Kinzoku Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 26, 1972, Ser. No. 220,775
Claims priority, application Japan, June 24, 1971, 46/45971
Int. Cl. F04f 11/00; F04b 9/08, 35/02
U.S. Cl. 417—92 2 Claims



The oil-diaphragm chamber of an oil-diaphragm slurry pump is provided with level detection sensors for detecting the oil diaphragm position and an air detection sensor for detecting air quantity in the chamber, and an automatic controller operates in response to detection signals from these detection sensors to operate oil-supplying and oil-discharging valves and thereby to control and maintain the oil diaphragm at a predetermined normal position and to discharge accumulated air from the chamber.

3,743,445

REGULATED PUMP WITH CONSTANT DISPLACEMENT VOLUME

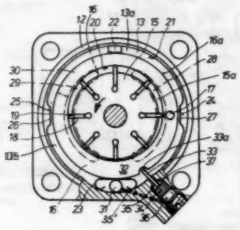
Wilhelm Dworak, Stuttgart-Vaihingen; Karl-Heinz Muller, Gerlingen, and Wolfgang Talmon, Otisheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 1, 1971, Ser. No. 130,288

Claims priority, application Germany, Apr. 2, 1970, P 20 15 744.2

Int. Cl. F04b 49/00

U.S. Cl. 417—220 12 Claims



A pump has a housing with a housing ring, a rotor with pistons, and a control ring between the housing ring and the rotor so that a working space is formed between the rotor and the control ring, and an annular space is formed between the control ring and the housing ring. The annular space is divided into first and second control spaces, connected by throttling means. The first control space receives high pressure fluid, and the second control space discharges into a consumer line. When at high rotary speed, the pressure differential becomes great, the control ring is displaced to reduce the working space so that a substantially constant volume is pumped at different speeds. A compensating device responds to the pressure in the consumer line to urge the control ring to increase the working space so that the influence of the fluid pressure and of the piston friction on the control ring is compensated.

3,743,446

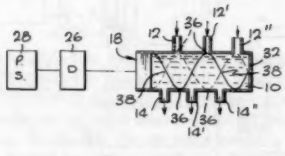
STANDING WAVE PUMP

Harold Mandrolan, La Canada, Calif., assignor to Atek Industries, Inc., North Hollywood, Calif.

Filed July 12, 1971, Ser. No. 161,656

Int. Cl. F04f 7/00

U.S. Cl. 417—240 8 Claims



An efficient fluid pump which has a chamber for receiving the fluid to be pumped and a transducer for establishing a travelling wave in the fluid. The length of the chamber and the frequency of the transducer are adjusted so that a standing wave pattern is set up in the fluid having one or more pressure nodes and one or more pressure antinodes in it. At least one entrance port is provided in the chamber at the pressure nodes and at least one exit port is provided in the chamber at the pressure antinodes so that fluid will be drawn into the cylinder at the pressure node and will be forced out of the cylinder at the pressure antinode to achieve a pumping action.

3,743,447

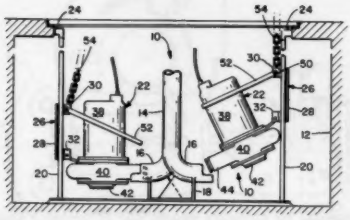
SELF COUPLING SUBMERSIBLE PUMP

Charles T. Lynch, Albany, Calif., assignor to Baltimore Aircoil Company, Inc., Baltimore, Md.

Filed June 24, 1971, Ser. No. 156,378

Int. Cl. F04b 35/06

U.S. Cl. 417—360 4 Claims



A pump apparatus for catch basins or sumps includes a pump unit supported for up and down movement on fixed guide means. The pump, having a tubular outlet, tilts at an angle when being raised or lowered, and the outlet is vertically aligned with the inlet opening of a discharge pipe. When the pump outlet engages the discharge pipe opening as the pump unit is lowered, it is automatically forced into a full coupling position by the weight of the pump unit.

3,743,448

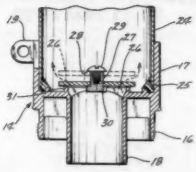
PUMP BASE ASSEMBLY

Chester Dorn, Spencer, Iowa, assignor to Superior Manufacturing Company, Spencer, Iowa

Filed Aug. 26, 1971, Ser. No. 175,263

Int. Cl. F04b 21/02; B67d 5/42

U.S. Cl. 417—570 4 Claims



A pump base assembly for connecting a pump cylinder and a container for fluid to be pumped including a unitary body member adapted to receive and clamp the pump cylinder, a check valve carried by the body member, and sealing means providing a fluid-tight seal between the body member and the pump cylinder received in the body member. A resilient, ring type sealing means is disclosed which has two annular segments joined throughout their circumference, one of the annular segments being adapted to be urged against the inner lower wall surface of a cylinder received in the body member.

3,743,449

ROTOR FOR A ROTARY COMBUSTION ENGINE

Johannes Steinwart, Bad Friedrichshall, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau, Bodensee, Germany

Filed Apr. 21, 1972, Ser. No. 246,417

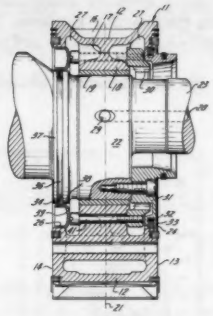
Claims priority, application Germany, June 7, 1971, P 21 28 235.9

Int. Cl. F01c 21/00; F03c 3/00; F04c 1/06

U.S. Cl. 418—39 4 Claims

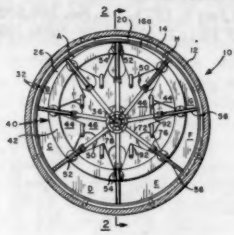
A rotor for a rotary engine, symmetrical about its central

plane for ease of manufacture and adapted to having its regis-



try gear installed on either side, rendering it suitable for installation at any rotor position in a multirotor engine.

providing the motive power for engine operation. The rotor and the flywheel, as restrained and controlled by the plurality



of cranks, move in rotary orbital paths, the vanes reciprocating in a wiping action over the internal surface of the cylinder.

3,743,450

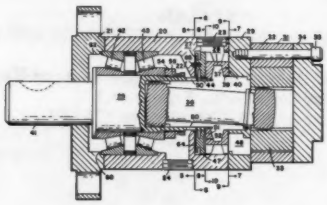
DIRECTLY MOUNTED ROTARY VALVE ON AN AXIAL THRUST BEARING LOAD SHAFT

George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio

Continuation of Ser. No. 11,488, Feb. 16, 1970, Pat. No. 3,658,450. This application Jan. 31, 1972, Ser. No. 222,096

Int. Cl. F16k *25/00*; F01c *1/02*; F03c *3/00*

U.S. Cl. 418—61 10 Claims



Directly mounted rotary valve on an axial thrust bearing load shaft, wherein an axial valve tolerance is compensated for by mounting the rotary valve axially between stationary valve wall means and axially constrainable wall means and wherein an axial shaft tolerance is accommodated for by mounting the rotary valve on the load shaft with an axial slidable connection therebetween.

3,743,451

ROTARY ENGINE

Howard R. Chapman, 20743 Strathern Street, Canoga Park, Calif.

Filed May 24, 1971, Ser. No. 146,249

Int. Cl. F01c *1/02*, *21/00*, *19/00*

U.S. Cl. 418—61 26 Claims

A rotary engine wherein a stationary cylinder contains an internal rotor mounted on a crank for movement thereupon eccentric to the cylinder and opposed by a counterbalancing flywheel connected to the rotor through an intermediate structure by a plurality of cranks. A plurality of vanes extending radially outward through the rotor engage the cylinder surfaces to provide with the rotor a plurality of sealed gas expansion chambers. Valve means sequentially control the admission of pressurized gases to and the exhaust of expanded gases from the chambers, the gas pressure acting upon the rotor

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3,743,452

LIQUID COOLING SYSTEM FOR ROTARY PISTON ENGINES

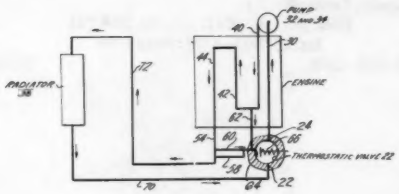
Johannes Steinwart, Bad Friedrichshall, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau, Bodensee, Germany

Filed Apr. 19, 1972, Ser. No. 245,588

Claims priority, application Germany, May 10, 1971, P 21 23 010.4

Int. Cl. F01c *21/06*

U.S. Cl. 418—84 10 Claims



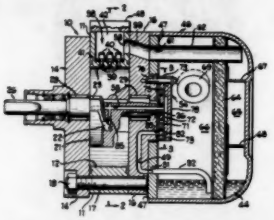
A liquid cooling system for a rotary piston, internal combustion engine having cooling passageways, including an inlet cooling passageway, in the engine housing which are connected together at opposite ends to provide series flow of cooling liquid therethrough, the system comprises a cooling liquid inlet port in the engine housing communicating with a liquid cooler and the inlet cooling passageway. An outlet port is provided in the engine housing to connect the cooling passages with the liquid cooler to pass heated cooling liquid to the latter. A liquid circulating pump is disposed at the end of the engine housing opposite from the inlet port and in communication with the inlet cooling passageway to draw cooling liquid through the inlet port and inlet cooling passageway and force cooling liquid through the other liquid cooling passageways and the outlet port. A bypass passageway is provided to communicate the other liquid cooling passageways with the inlet port and inlet cooling passageway. A thermostatically controlled valve is disposed at the inlet port to regulate flow through the bypass passageway and, when fully open, permit flow of cooling liquid to the inlet port via the bypass passageway and thus bypass the liquid cooler.

3,743,453

COMPACT ROTARY SLIDING VANE COMPRESSOR FOR AN AUTOMOTIVE AIR-CONDITIONING SYSTEM

Frederic H. Abendschein, Columbia; Lester E. Harlin, and Alfred G. Mount, both of York, all of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 8, 1971, Ser. No. 160,695
Int. Cl. F01c *21/04*, *21/06*; F03c *3/00*
U.S. Cl. 418—88 1 Claim



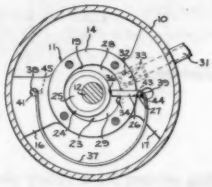
A gear-type oil pump, parallel mounted to the compressor's rear bearing plate and directly driven by the same shaft that drives the compressor's rotor assembly, delivers oil to that rotor assembly to effect lubrication and sealing, after which the oil flows into the compression chamber and becomes entrained in the refrigerant gas. Removal of the oil from the oil-laden discharge gas is accomplished by an oil separator located within a shell attached to the rear bearing plate and into which shell the discharge gas flows. Oil-free discharge gas exits through an outlet in the shell while the separated oil returns to a reservoir in the bottom of the shell, from which it is supplied to the oil pump inlet.

3,743,454

ROTARY COMPRESSOR

Dean C. Rinehart, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 18, 1972, Ser. No. 218,721
Int. Cl. F01c *1/00*; F04c *1/00*
U.S. Cl. 418—248 2 Claims



A rotary compressor comprising a cylinder, a vane slidably mounted in the cylindrical wall of the cylinder and a spring to bias the vane into engagement with an eccentrically rotatable rotor. The spring is C-shaped and has one end mounted in the vane and the other diametrically located and arranged in the stationary member to pivotally move in response to movement of the vane.

3,743,455

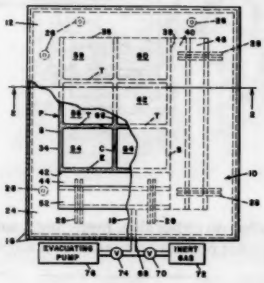
APPARATUS FOR DIFFUSION MOLDING

Eugene D. Green, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Sept. 30, 1971, Ser. No. 185,111
Int. Cl. B29c *3/00*
U.S. Cl. 425—78 10 Claims

An apparatus for diffusion molding cubical granules of metal into a workpiece. Tooling is assembled to form the shape of a mold cavity which contains the cubically-shaped metal granules to be diffusion molded. Collapsible supports space the tooling from the interior walls of an envelope containing the tooling. Pressure bars, slidably engaged with the walls of the mold cavity, transmit compressive force applied on the envelope to the metallic granules. The envelope is sealed and evacuated to facilitate oxide and contaminate-free diffusion molding.

The method for diffusion molding cubically shaped metal



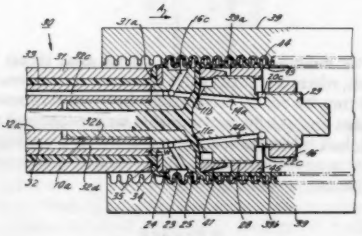
granules into a workpiece comprises cleaning the granules, depositing them into the cavity of a tooling mold, vibrating the tooling mold to orient the interfaces of the cubical granules into alignment with one another, encapsulating the tooling mold in a sealed enclosure, evacuating the enclosure, applying heat and pressure to the enclosure to effect diffusion molding of the granules into a workpiece configuration, and removing the workpiece from the enclosure and reusable tooling mold.

3,743,456

ADJUSTABLE DIE HEADS FOR EXTRUDERS AND THE LIKE

Adrian V. Cini, Levittown, Pa., assignor to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.

Filed Aug. 20, 1971, Ser. No. 173,603
Int. Cl. B29d *23/04*
U.S. Cl. 425—112 4 Claims



An adjustable die head for extruders and the like advantageous for use in forming corrugated tubing with or without an interior skim layer. The die head is secured to an extruder apparatus and utilizes a removable stock control spacer for controlling the rate of flow of stock from an annular shaped outlet. Separate conduits are provided within the extruder die head which communicate with air outlets arranged at longitudinally spaced intervals along the die head. A conduit is also provided for communication with stock outlet openings which are utilized to form the skim layer within the corrugated tubing. Adjustable collars are provided at axially spaced intervals along the die head for regulating the flow of air and stock through the aforesaid outlet openings or alternatively to cut off selected ones of the aforesaid flows, if desired.

3,743,457

STOCK FLOW CONTROL MEANS FOR EXTRUDERS AND THE LIKE

Adrian V. Cini, Levittown, Pa., assignor to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.

Filed July 13, 1971, Ser. No. 162,151
Int. Cl. B29f 3/10
U.S. Cl. 425—113 10 Claims

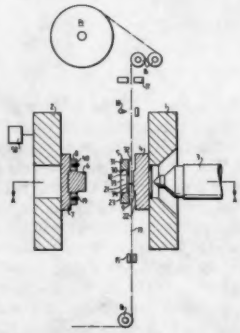
A control assembly for extruders and the like in which stock is fed to the extruder at a substantially constant rate, passing through the outlet end into die members to form the plastic product defined by the mold members. The extruder head is provided with an additional outlet port for forming a skim along the interior surface of the product being formed which requires a cut-off of stock flow at periodic intervals. Rotatable means are provided for selectively diverting a portion of the main stock flow to be introduced into an opening within an extrusion die member so as to be diverted therethrough and passed through a central opening which communicates with an associated outlet opening provided in the extruder die head to form the skim layer. The control means comprises an axially rotatable plug member which, in a first angular position, provides for cut-off of the central stock flow while in a second position permits the main stock flow to be diverted therethrough and to enter into the extruder central opening. The control means, which is preferably a piston-driven structure, is loosely linked to the plug means so as to prevent any jarring or misalignment of the plug member while at the same time providing rapid and positive on/off action of the control means.

3,743,458

APPARATUS FOR INJECTION MOLDING ARTICLES CARRYING DECORATIONS PUNCHED FROM A BAND

Siegfried Hallauer; Gaston Mathys, both of Zurich, and Hans Wenk, Fallanden, all of Switzerland, assignors to Ornapress AG, Schwerzenbach, Switzerland

Continuation-in-part of Ser. No. 654,249, July 27, 1966, abandoned. This application Oct. 12, 1970, Ser. No. 80,055
Claims priority, application Switzerland, July 22, 1966, 10835/66
Int. Cl. B29f 1/10
U.S. Cl. 425—122 7 Claims



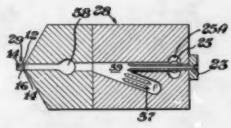
A method of decorating articles formed by injection molding wherein a foil carrying markings in the form of ornamentations or inscriptions is united with the article. The invention contemplates introducing the foil in the form of a band into a mold comprising three parts, namely a first mold portion, a cooperating female mold element and a cutting male mold portion and punching out by means of said mold a foil piece carrying the desired marking from the foil in band form. The punched-out foil piece remaining in the mold is then united with the article, and thereafter the mold is opened and the foil in band form is advanced through a predetermined cyclic increment. The inventive apparatus for the decoration of molded articles comprises a mold having a mold compartment, such mold being provided with the aforesaid first mold portion, cutting male mold portion and cooperating female mold element. The cutting male mold portion and female mold element collectively form a punching tool means for punching-out foil pieces from a foil which is in substantially band-like form. The cutting male mold portion has a front end which limits the aforesaid mold compartment. At least one of the mold portions is equipped with shoulder means thereat for transmitting the closing pressure to the female mold element. During relative movements of the three parts of the mold towards one another by a single drive both mold closing and foil cutting is performed. Electrostatic charging of the foil is also utilized for promoting adherence of the foil to the cutting male mold portion.

3,743,459

APPARATUS FOR COEXTRUSION OF MULTILAYER SHEET OR FILMS

Walter J. Schrenk, Bay City, and Lewis S. Mounts, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 805,452, March 10, 1969, abandoned. This application May 19, 1971, Ser. No. 145,071
Int. Cl. B29f 3/04
U.S. Cl. 425—131 1 Claim



This invention comprisea a multilayer laminated sheet for rigid packaging having an inner barrier laye r which is adhesively bonded to a polyolefin resin layer on one side and to a styrene polymer layer on the other side and a method and apparatus for making said laiminated sheet by coextrusion of all but the styrene polymer layer from a common die and immediately combing the resulting product with a styrene polumer sheet which is freshly extruded in tandem from a separate die. The invention further comprises a unique multilayer extrusion die configuration wherein a single thermoplastic substance is subdivided into layers of substantially equal thickness to the layers of other substances after which all of the layers are simultaneously united and extruded.

3,743,460

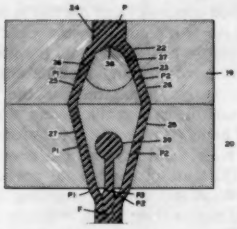
ADAPTER FOR COEXTRUSION APPARATUS

George Woolridge, Arcola, Ill., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,185
Int. Cl. B29f 3/02
U.S. Cl. 425—131 9 Claims

An extrusion die for the production of multi-layer flat films of thermoplastic sheet material wherein the die is selectively

adjustable to change from a three-layer laminated film to a two-layer laminated film and, where a two-layer film is being extruded, to reverse the arrangement of the layers.



3,743,461

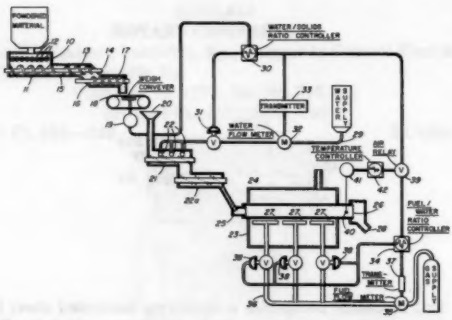
PELLETIZER CONTROL SYSTEM

David C. Williams, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 655,528, July 24, 1967, Pat. No. 3,657,400, which is a division of Ser. No. 103,925, April 8, 1961, Pat. No. 3,337,907. This application Jan. 3, 1972, Ser. No. 214,965

Int. Cl. B29f *5/00*

U.S. Cl. 425—148 **9 Claims**



The application discloses an automatic system for the control of pelletizing apparatus in which continuous weighing means (e.g., a weigh belt) are used to generate a signal representative of the weight of a flow of a "loose" powdery solid from a feeder (e.g., feed screw) to a pelletizer in which the solid is mixed with a pelletizing fluid, and the flow of pelletizing fluid into the pelletizer is controlled in accordance with the signal by flow regulating means interconnected with the weighing means.

3,743,462

TRAVERSING ROLL TYPE EXTRUDER

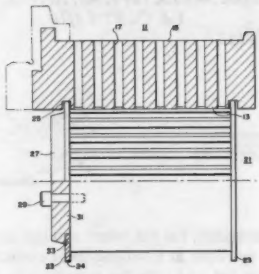
Aldo M. Alessio, Novato, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Filed July 23, 1971, Ser. No. 165,659

Int. Cl. B28b *3/20*

U.S. Cl. 425—192 **5 Claims**

The present invention is an improved pellet mill die and roller assembly wherein the roll assembly is provided with removable end guides to prevent material from being squeezed out from between the die surface and the ends of the working portion of the roll.



3,743,463

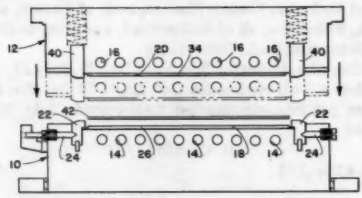
MOLD CONSTRUCTION HAVING THERMAL BAFFLE FOR MOLDING ARTICLES WITHOUT DISTORTION SUCH AS PLASTIC PRINTING PLATES AND THE LIKE

Richard B. Patrick, Bernardsville, and John Sonia, Califon, both of N.J., assignors to Union Carbide Corporation, New York, N.Y. and Sun Graphic Systems, Inc., Addison, Ill., part interest to each

Filed Sept. 21, 1970, Ser. No. 74,020

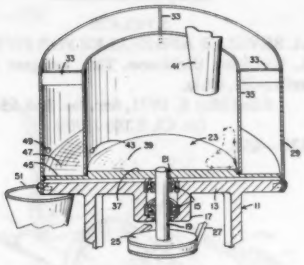
Int. Cl. B29c *3/02*; **B29f** *5/00*

U.S. Cl. 425—195 **10 Claims**



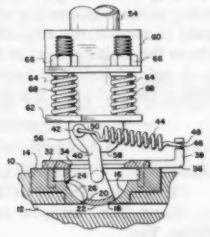
Water cooled metal mold halves have a plastic material matrix selectively removably clamped on one mold half and a plastic material thermal baffle adhesively secured to the other mold half with hot fluid plastic during molding thereof being positioned between the matrix and thermal baffle backed by the respective mold halves followed by cooling to a final self-supporting form prior to removal resulting in an article such as a plastic printing plate. In order to provide generally equal heat transfer from the hot fluid plastic being molded and thereby prevent distortion of the various configurations on the final plastic printing plate being molded, the matrix and thermal baffle are preferably formed of the same plastic material and a generally uniform thickness of the thermal baffle is generally equal to an average thickness of the matrix, the matrix necessarily varying in thickness due to the various configurations to be imparted to the final plastic printing plate to be molded.

3,743,464
CONTINUOUS SPHERING APPARATUS
Samuel S. Strobert, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.
Filed Aug. 24, 1971, Ser. No. 174,377
Int. Cl. B29c *23/00*
U.S. Cl. 425—222 8 Claims



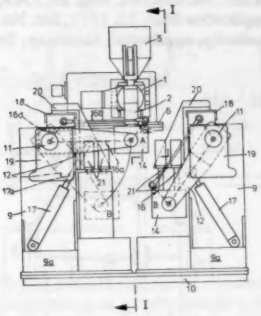
Apparatus for use in continuous sphering of particles by centrifugal and frictional forces.

3,743,465
CUT-OFF GATE FOR MOLD
Jerome L. Asner, Oklahoma City, Okla., assignor to Jamco, Inc., Oklahoma City, Okla.
Filed Jan. 3, 1972, Ser. No. 214,545
Int. Cl. B29c *1/00, 5/00*
U.S. Cl. 425—245 5 Claims



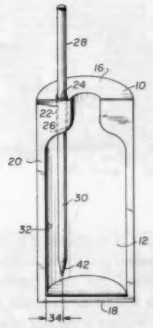
A cut-off gate for a mold to prevent plastic material from oozing out of the mold opening after the nozzle has been removed. The mold is provided with a semi-spherical seat in communication with the mold cavity through an opening in the seat, a cut-off gate of substantially semi-spherical configuration having an outer semi-spherical surface adapted to engage the semi-spherical surface of the seat and also having an opening so that, in a closed position of the gate the two openings are out of registry with each other; in the open position, the openings in the gate and the seat are in registry with each other and with an opening in a supply nozzle. Means are provided for rotatably mounting the gate with respect to the semi-spherical seat, with further means responsive to the movement of the supply nozzle towards and away from the mold for rotating the gate into the open and closed positions,respectively.

3,743,466
APPARATUS FOR THE PRODUCTION OF HOLLOW BODIES OF THERMOPLASTIC MATERIALS IN A BLOWING PROCESS
Egon Gampe, Monheim, Germany, assignor to Rheinmetall GmbH, Duesseldorf, Germany
Filed Apr. 23, 1971, Ser. No. 136,732
Claims priority, application Germany, Apr. 25, 1970, P 20 20 357.0
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 6 Claims



An apparatus for the production of hollow bodies of thermoplastic synthetic material in a blowing process with two blow-molds swingable between a spray head of an extruder and a blowing station, which comprises means for alternatingly receiving extruded raw hoses in the blow-mold with its closing blow-mold halves and for feeding the raw hoses to a blow station. A U-shaped swinging frame is provided which has legs and closing plates. The U-shaped swinging frame has a box-shaped connecting part and a flyingly mounted axle is also provided. The U-shaped swinging frame is suspended on the axle. A carrying frame secures the axle and the axle is disposed such that the vertical symmetrical plane of at least one of the spray heads is arranged in the crossing point of arcs of a circle defined by both blow molds.

3,743,467
MOLD ASSEMBLY TO FORM A CONTAINER
Arnelson Norvaldo Lopez, Avellaneda Calle Lavalle No. 301, Buenos Aires, Argentina
Filed Mar. 1, 1971, Ser. No. 119,542
Claims priority, application Argentina, Feb. 19, 1970, 227047
Int. Cl. B29c *5/06*
U.S. Cl. 425—387 4 Claims



A mold assembly is provided for forming a container with an inner channel in the wall of the container, which assembly

includes a mold having an interior molding cavity and a passageway passing through at least one walled surface thereof, and an elongated core removably positioned in the passageway with a portion thereof extending into the interior molding cavity.

3,743,468

APPARATUS FOR MAKING SHAPED BODIES

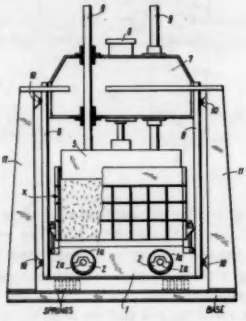
Gunter Helmrich, Grevenbroich/Nrh, and Fritz Wulfing, Rheydt, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Division of Ser. No. 854,184, Aug. 29, 1969, abandoned. This application Mar. 22, 1971, Ser. No. 126,483

Claims priority, application Germany, Sept. 3, 1968, P 17 84 661.6

Int. Cl. B29c 3/00

U.S. Cl. 425—429 **5 Claims**



An apparatus for producing coherent shaped bodies from granular material. The granular material is confined in a mold and the mold is subjected to vibratory motions requisite for compacting the granular material. In accordance with the invention the frequency of the vibratory motions is continuously varied.

3,743,469

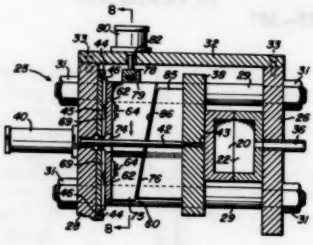
MOLD CAVITY LOCKING APPARATUS

James H. Gibbons, 1735 E. Evanston Road, Tipp City, Ohio

Filed Aug. 27, 1971, Ser. No. 175,671

Int. Cl. B29f 1/00

U.S. Cl. 425—450 **9 Claims**



A first mold member is supported by a platen for movement between open and closed positions relative to a mating second mold member mounted on the frame which supports the platen. A first wedge member extends across the back of the platen, and a second wedge member is supported by the frame for aligned sliding engagement with the first wedge member to effect locking of the mold members after they are closed. In one embodiment, the second wedge member is also supported for lateral movement to an offset position relative to the first wedge member to provide for quickly opening and closing the mold members. Movement of the first mold member and the movement of the second wedge member are produced by a set of fluid cylinders which are actuated in timed sequence and are effective to exert a continuous force to hold the mold members in their closed positions. In another embodiment, the second wedge member is supported by a plate which may be quickly retracted and extended for opening and closing the mold member.

3,743,470

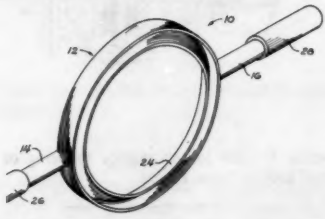
MANUAL BEVELER AND SEALER FOR PIPE COATINGS

Francis L. Bickham, Dickinson, Tex., assignor to H. C. Price Co., Bartlesville, Okla.

Filed May 6, 1971, Ser. No. 140,656

Int. Cl. B28b 19/00

U.S. Cl. 425—458 **4 Claims**



A finishing tool for a length of pipe coated with a material containing a meltable binder is designed to seal the material on the pipe surface while beveling the terminal edge of the coating to present a smooth surface suitable for taping or coating after two lengths of pipe are welded together. The finishing tool includes a circular ring conforming generally to the transverse configuration of the pipe and sufficiently larger than the latter to permit the ring to be telescoped over the end of the pipe and into engagement with the proximal terminal edge of the coating. The ring is of V-shaped cross section and is capable of withstanding substantial heating without deformation. A heater is adapted to receive the ring and heat the latter to a temperature above the melting point of the binder constituent of the coating. A pair of insulated handles allow installation and manipulation of the tool while it is hot.

3,743,471

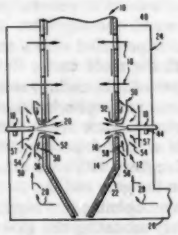
BURNER ASSEMBLY WITH DUAL REGISTER AND THROAT CONSTRUCTION

Kurt S. Jaeger, Hurst, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed June 15, 1971, Ser. No. 153,306

Int. Cl. F23l 7/00

U.S. Cl. 431—115 **6 Claims**



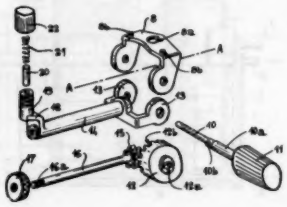
The formation of nitric oxide is reduced in the furnace section of a vapor generator by providing a throat construction

coaxially mounted in the burner ports and utilizing two separate registers.

3,743,472
LIGHTERS, HAVING A FLINT AND KNURLED WHEEL, FOR BURNERS

Roger Perret, Oullins, France, assignor to Application Des Gaz, Paris (Seine), France

Filed July 20, 1971, Ser. No. 164,382
Int. Cl. F23q *1/02*
U.S. Cl. 431—274 **5 Claims**

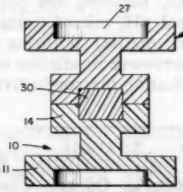


Lighter device for gas burners of the type wherein a flint and a spark wheel are controlled by a spark wheel shaft includes an oscillating support in which the shaft is rotatably mounted, the support carrying a sleeve containing the flint. A lighting control shaft is provided and the end of the support opposite from the spark wheel is pivotally mounted on the lighting control shaft. A stationary part is provided in which the control shaft is mounted so that the oscillating support can rock the spark wheel to and from the burner between abutment means for limiting the rocking movement. The lighting control shaft can rotate freely in both the oscillating support and the stationary part, and the lighting control shaft and spark wheel shaft are rotatably connected one to the other by bevel gearing.

3,743,473
CANDLE HOLDER COMBINATION

Robert F. Von Suskil, Vineland, N.J., assignor to Wheaton Industries, Inc., Millville, N.J.

Filed Mar. 17, 1972, Ser. No. 235,604
Int. Cl. F23d *3/16*
U.S. Cl. 431—297 **5 Claims**

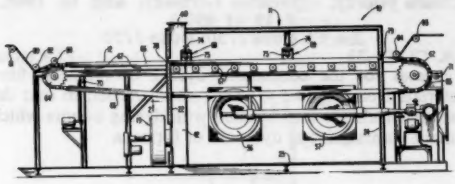


A candle holder combination is provided, whereby a pair of candle holders of a given height may be used together, in interconnected relation, to function as a pedestal type candle holder, having a height that is substantially the aggregate of the pair of candle holders.

3,743,474
CARPET DRYING METHOD

James Donald Brock, Chattanooga, Tenn., assignor to Textile Systems, Inc., Summit, Tenn.

Continuation-in-part of Ser. No. 864,357, Oct. 7, 1969, Pat. No. 3,641,681. This application Oct. 12, 1971, Ser. No. 188,095
Int. Cl. F26b *3/32*
U.S. Cl. 432—8 **5 Claims**

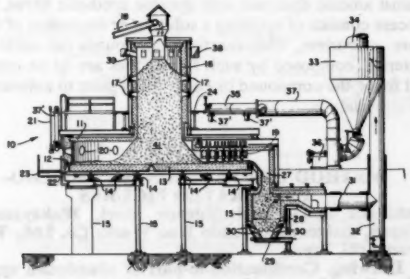


A method of drying carpets and the like including the steps of passing wet carpet along its length through a housing along a rectilinear path, passing hot air from one side of the path through the carpet and recirculating the air from the other side of the carpet about the side edges of the carpet, heating the air after it has passed through the carpet prior to recirculating the air, and exhausting to the atmosphere that portion of the air which is passed through the carpet first entering the housing.

3,743,475
CENTRAL SHAFT FEEDING FOR ROTARY HEARTH FURNACE

James A. Scharbrough, Allison Park; Charles R. Wilt, Jr., Pittsburgh, and William E. Solano, Monroeville, all of Pa., assignors to Salem Corporation, Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,437
Int. Cl. F27b *19/00*
U.S. Cl. 432—16 **12 Claims**



A method and apparatus for the thermal decomposition of limestone or other mineral substance wherein the apparatus employed for carrying out the method combines a vertical shaft for the feed therethrough of the materials to be treated and a rotary hearth positioned therebeneath. The rotary hearth is contained within a substantially airtight enclosure and receives the downward flow of the materials from the central shaft and further processes the same to produce the desired resultant product.

CHEMICAL

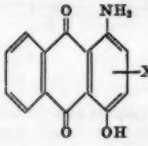
3,743,476

CONTINUOUS DYEING OF SYNTHETIC FIBERS WITH WATER-IMMISCIBLE ORGANIC SOLVENTS AND AMINO HYDROXY ANTHRAQUINONES

Günter Gehrke, Volker Hederich, and Peter Wegner, Cologne, and Rütger Neeff, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,652
Claims priority, application Germany, Aug. 16, 1969, P 19 41 699.0
Int. Cl. C09b *1/50;* D06p *1/20*
U.S. Cl. 8—39 13 Claims

Process for the continuous dyeing of synthetic fibre materials from organic solvents, characterised in that the fibre materials are impregnated with dyeing liquors which contain anthraquinone dyestuffs of formula



in which X denotes oxygen or sulphur and R represents a C_4–C_{18}-alkyl radical or an alkoxyalkyl, cycloalkoxyalkyl, aralkoxyalkyl or aryloxyalkyl radical, and that the materials are subsequently subjected to a heat treatment.

The dyeings obtained are distinguished by high dyestuff yield, very good build-up and excellent fastness properties, especially very good fastness to thermofixing, washing, rubbing and light.

3,743,477

PROCESS FOR RESERVING TEXTILES OF NATURAL POLYAMIDE FIBRES AND OF SYNTHETIC FIBRES DYEABLE WITH ACID DYES

Hermann Egli, Basel, and Hermann Ulshofer, Allschwill, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed June 24, 1968, Ser. No. 739,214
Claims priority, application Sweden, July 3, 1967, 9429/67
Int. Cl. D06p *3/16, 3/18, 5/12*
U.S. Cl. 8—66 6 Claims

A process for the reservation of natural polyamide fibres against anionic dyes and acid dyeable synthetic fibres, which process consists of applying a solution or dispersion of one or more colourless, fibre-reactive compounds to areas of a material (composed by such fibres) that are to be reserved, and fixing the compound or compounds prior to coloration of the material.

3,743,478

METHOD FOR PATTERNING THERMOPERFORATED FIGURES

Yoshikazu Sando and Shigeru Mori, Wakayama-shi, Japan, assignors to Sando Iron Works Co. Ltd., Wakayama-shi, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 384,551, July 22, 1964. This application June 11, 1969, Ser. No. 832,447
Int. Cl. D06m *5/20, 9/02;* D06q *1/02*
U.S. Cl. 8—114.6 13 Claims

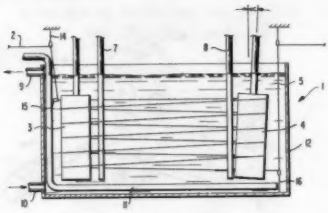
Thermoperforated patterns are formed in fabrics containing cellulose fibers by printing an etching agent containing an alkali chlorate and an aluminum salt of strong inorganic acid on the fabric, then by heating the fabric to decompose the cellulose fibers without carbonizing them and removing the decomposed cellulose fibers by means of an oxidizing agent such as sodium chlorite.

3,743,479

PROCESS AND APPARATUS FOR WASHING RESIDUAL SOLVENT FROM AS-SPUN POLYBENZIMIDAZOLE CONTINUOUS FILAMENTARY MATERIALS

Arthur E. Prince, Jr., Basking Ridge, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,973
Int. Cl. B05c *3/132*
U.S. Cl. 8—151.2 22 Claims



An improved process and apparatus for the washing of residual solvent from as-spun polybenzimidazole continuous filamentary materials (e.g., monofilament and multifilament strand, cable, yarn, tow, etc.) are disclosed. The material is passed onto one end of one roller of a pair of spaced rollers within a washing tank. The material is wound about the pair of rollers through a generally helical path and exits off of the other end of the pair of rollers. The rollers are at least partially immersed in a heated washing liquid. Wiper bars are located within the washing tank to wipe surface bubbles from the continuous filamentary material during washing to increase the efficiency of the washing step. Washing is achieved in a matter of minutes as opposed to hours in prior procedures. Two or more adjacent pairs of rollers in one or more tanks may be utilized with the material being advanced from one pair of rollers to another pair, preferably while immersed in the washing liquid.

3,743,480

STERILIZATION OF BIOLOGICAL FLUIDS

John D. Falk, Corning, Iowa, assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,825
Int. Cl. A61k *23/02*
U.S. Cl. 21—2 15 Claims

A process for sterilization of a protein-containing fluid (e.g., blood serum) without coagulating the protein, comprising preliminarily filtering the fluid, adjusting the conductivity by dialysis, adjusting the pH if necessary to maintain the original pH, microfiltering the fluid to remove some bacterial matter, sterilizing at relatively low temperatures by microwave irradiation or by steam injection, and then readjusting the conductivity to its original level.

3,743,481

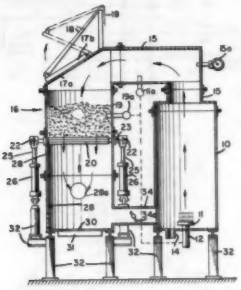
APPARATUS FOR REMOVING SELENIUM

Umeo Nakano, Montreal, Quebec, Canada, assignor to Noranda Mines Limited, Toronto, Ontario, Canada

Original application Apr. 1, 1969, Ser. No. 811,907, now Patent No. 3,627,486. Divided and this application Feb. 17, 1971, Ser. No. 116,227
Int. Cl. B01j *1/00*
U.S. Cl. 23—277 R 2 Claims

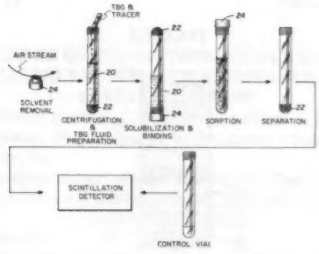
In an operation wherein selenium values are recovered from pelletized selenium-containing materials involving

heating pelletized selenium-containing materials in the presence of air so as to volatilize the selenium from said pelletized selenium-containing materials in the form of selenium dioxide, improved results are obtained by employing an apparatus wherein a mass of pelletized selenium-containing material is maintained static within a roasting zone and preheated air employed to heat the mass of pelletized selenium-containing materials is passed



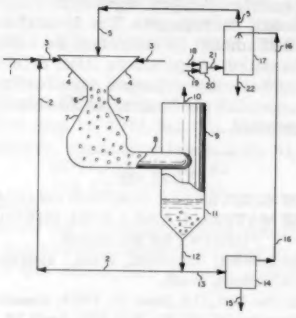
downwardly through said mass of pelletized selenium-containing materials maintained at a temperature of about 1350° F. for a period of time in the range about 1–6 hours sufficient to volatilize substantially all of the selenium from said pelletized selenium-containing materials and thereupon discharging the resulting substantially deselenized pelletized material from said roasting zone.

3,743,482
METHOD AND APPARATUS FOR DETERMINING THYROID FUNCTION
Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories, Inc., Dallas, Tex.
Filed Dec. 30, 1970, Ser. No. 102,827
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **15 Claims**



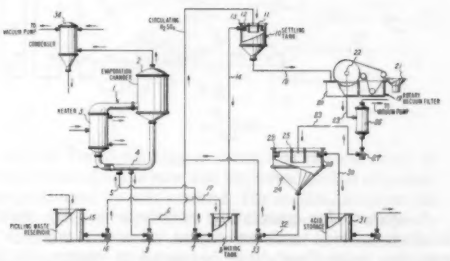
Method and apparatus for measuring the total amount of thyroid hormone within a body fluid. The procedure includes an extraction step whereby thyroid hormone (thyroxine) is initially extracted from a blood sample by acidifying the sample and thereafter extracting the thyroxine with a solvent such as alcohol. An aliquot of the solvent containing the extracted thyroxine is placed into a shallow well receptacle and the solvent is then evaporated by an impinging airstream. The shallow well receptacle is adapted to cooperate in sealing relationship with the open end of a buffer-containing vial so that when in place, a buffer solution containing known amounts of thyrobinding globulin and radioisotope labeled thyroid hormone can be mixed with the dried thyroxine by merely inverting the vial.

3,743,483
CRYSTALLIZATION OF NaCl FROM $MgCl_2$ SOLUTION
Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction, New York, N.Y.
Filed May 28, 1971, Ser. No. 148,056
Int. Cl. C01d *1/30*
U.S. Cl. 23—303 **9 Claims**



An aqueous brine containing dissolved sodium chloride and magnesium chloride is concentrated to produce selective crystallization of sodium chloride in a magnesium chloride-rich concentrated brine, by passing the aqueous brine through a venturi contactor for evaporation of water by direct contact with a high velocity hot gas stream.

3,743,484
REGENERATION OF SULFURIC ACID PICKLING WASTE
Yasuo Morimoto, Osaka, Japan, assignor to Daido Chemical Engineering Corporation, Osaka-shi, Japan
Filed Nov. 10, 1970, Ser. No. 88,403
Claims priority, application Japan, Dec. 30, 1969, 45/109
Int. Cl. B01d *1/00, 1/30, 9/00*
U.S. Cl. 23—306 **4 Claims**



Sulphuric acid pickling waste is regenerated by mixing it with circulating sulphuric acid. The resultant liquid mixture is heated prior to concentration in a vacuum evaporator to obtain sulfuric acid of a concentration of 40 to 55% by weight and ferrous sulfate monohydrate crystals dispersed therein in a slurry concentration of 10 to 30% by weight. Finally the sulfuric acid is separated from the ferrous sulfate monohydrate crystals for recovery, and part of the recovered sulfuric acid is circulated.

3,743,485

BIMETAL CAPABLE OF DEFORMATION

Arnold J. Gottlieb, Colonia, and George A. Majesko, Glen Ridge, N.J., assignors to Wilbur B. Driver Company

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,124
Int. Cl. B23p 3/20
U.S. Cl. 29—195.5 10 Claims

A bimetal is disclosed that consists essentially of a first metallic element that undergoes two phase changes at two preselected temperatures. The first element is metallurgically bonded to a second metallic element that does not undergo phase changes under the operating temperatures and has a coefficient of thermal expansion which approximately matches the first element through the range of the preselected temperatures. The bimetal is deformed a predetermined amount by subjecting the bimetal to one of the transformation temperatures. After deformation the bimetal remains in the deformed state without an appreciable change until the bimetal reaches the other phase change temperature.

3,743,486

METHOD OF SUBSURFACE BURNING OF QUANTITIES OF REFUSE MATERIAL AND A FUEL MIXTURE FOR USE IN THE METHOD

John A. Franciscovich, Aberdeen, Wash., assignor to Fibre-Weld, Inc., Aberdeen, Wash.

Division of Ser. No. 836,216, June 12, 1969, abandoned, which is a continuation of Ser. No. 634,482, April 28, 1967, abandoned. This application Sept. 24, 1969, Ser. No. 860,798
Int. Cl. C10l 1/32
U.S. Cl. 44—51 3 Claims

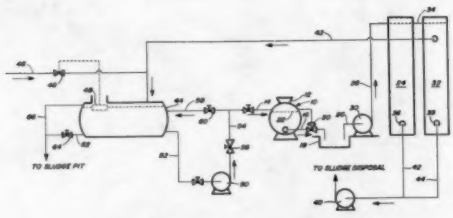
The incineration of quantities of refuse material by subsurface burning at high temperatures is attained by injecting fuel in the refuse and igniting it to heat nitrogenous material to the point of self-sustained burning.

3,743,487

ACETYLENE GENERATING SYSTEM

George H. Baker, Burgettstown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 6, 1971, Ser. No. 169,624
Int. Cl. C10h 21/16
U.S. Cl. 48—57 5 Claims



A system for generating acetylene gas by reacting calcium carbide and an excess of water wherein the resulting water lime slurry is treated to remove the lime sludge and the treated water is recycled for use in the reaction vessel.

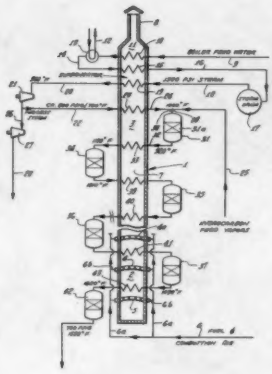
3,743,488

SYNTHESIS GAS GENERATION PROCESS

Marcel J. P. Bogart, Whittier, Calif., assignor to Fluor Corporation, Los Angeles, Calif.

Filed May 27, 1971, Ser. No. 147,379
Int. Cl. C01b 2/14
U.S. Cl. 48—214 15 Claims

Process for generating high pressure synthesis gas containing CO and H_2 and useful in Oxo processes, hydrogen production, and in the production of ammonia, methanol and the like. The reaction mixture of steam and hydrocarbon vapor is heated out of contact with the reaction catalyst and adiabatically reacted in a separated reaction zone and alternately reheated and further reacted as required to substantially exhaust the reaction mixture of hydrocarbon vapor. Separation of the heating and catalytic reacting steps overcomes previously encountered equipment-imposed limitations on high pressures within the reaction apparatus at reforming temperatures and thus enables higher pressure output synthesis gas. Significant fuel economies are realized through the use of convection heat to effect the lower temperature portion of the reforming reaction.

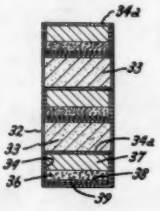


3,743,489

ABRASIVE BODIES OF FINELY-DIVIDED CUBIC BORON NITRIDE CRYSTALS

Robert H. Wentorf, Jr., Schenectady, and William A. Rocco, Scotia, N.Y., assignors to General Electric Company

Filed July 1, 1971, Ser. No. 158,711
Int. Cl. B24d 3/02; C09c 1/68
U.S. Cl. 51—307 17 Claims



Aluminum alloys of nickel, cobalt, manganese, iron, vanadium and chromium have been found to provide successful bonding mechanisms for the preparation of cubic boron nitride (CBN) compacts. These bonding media are particularly effective for preparing compacts of CBN crystals smaller than about 30 micrometers in largest dimension. The preparation of tool inserts made of cubic boron nitride crystals bonded to and supported on a sintered carbide mass is described wherein such an aluminum alloy is used as the bonding medium.

3,743,490

APPARATUS FOR PREVENTING DEFLECTION OF WORKPIECE

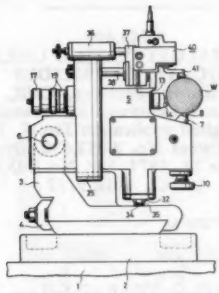
Hiroaki Asano, Chiryu, and Ikuo Otsu, Aichi-ken, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-Ken, Japan

Filed Nov. 15, 1971, Ser. No. 198,890

Claims priority, application Japan, Dec. 15, 1970, 45/112084

Int. Cl. B24b *41/06*

U.S. Cl. 51—238 S 3 Claims



Apparatus for preventing deflection of a workpiece worked by a grinding machine, for example, comprises a steady rest pivotally mounted on a stationary support, a horizontal supporting shoe and a vertical supporting shoe which are slidably mounted on the steady rest for supporting the workpiece, drive means for feeding the horizontal supporting shoe toward the workpiece while at the same time for pivoting the steady rest to feed the vertical supporting shoe toward the workpiece, and a single contact type measuring device for measuring the dimension of the workpiece. The measuring device is provided with a single measuring feeler adapted to engage the workpiece at a point diametrically opposite the vertical supporting shoe for measuring the dimension of the workpiece.

3,743,491

METHOD OF STRENGTHENING GLASS AND INCREASING THE SCRATCH RESISTANCE OF THE SURFACE THEREOF

James P. Poole; Herbert C. Snyder, and Mark A. Boschini, all of Brockway, Pa., assignors to Brockway Glass Company, Brockway, Pa.

Continuation-in-part of Ser. No. 782,738, Dec. 10, 1968, abandoned. This application July 12, 1971, Ser. No. 161,982

Int. Cl. C03c *21/60*

U.S. Cl. 65—30 26 Claims

A combined treatment for newly formed glass bodies for increasing the mechanical strength thereof, and for increasing the scratch resistance of the glass surface. Newly formed glass bodies at elevated temperatures, usually somewhat above 800° F. are sprayed or otherwise coated with stannic chloride, or a compound of titanium or zirconium which pyrolyzes to form a metal oxide film on the glass surface. While still at elevated temperatures the glass bodies are sprayed with an aqueous solution of a potassium compound which volatilizes and deposits potassium salt which acts through the previously deposited tin, titanium or zirconium coating to effect exchange of larger potassium ions for smaller sodium ions in a surface layer of the glass to produce a compressive stress layer. The glass is held at elevated temperature below its strain point, or cooled relatively slowly in a lehr, whereby this ion exchange proceeds to a sufficient degree while the glass is still at elevated temperature. When the glass has cooled it is washed to remove excess unexchanged potassium from the glass surface to expose the tin, titanium or zirconium coating at the exterior of the glass surface, and a final coating of an olefin polymer, such as polyethylene is applied to bond with and coact with the metal oxide coating to substantially improve the scratch resistance of the glass surface. Various transparent organic coatings may be employed in the final coating.

3,743,492

AMORPHOUS, NON-DEVITRIOUS FLUOROPHOSPHATE OPTICAL GLASS, FREE OF YELLOW COLORING AND PROCESS FOR PRODUCING THE SAME

Nobuyo Ogita, Tokyo, Japan, assignor to Hoya Glass Works, Shinjuku-ku, Tokyo, Japan

Filed Aug. 31, 1971, Ser. No. 176,451

Claims priority, application Japan, Aug. 31, 1970, 45/76,182, 45/76,183

Int. Cl. C03b *29/00*

U.S. Cl. 65—32 6 Claims

Raw materials for a fluorophosphate optical glass are melted in a non-oxidizing atmosphere, and in particular, in a nitrogen gas atmosphere or in a covered melting vessel.

3,743,493

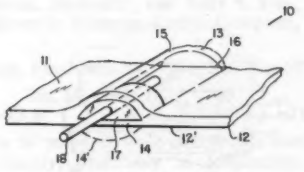
METHOD OF MAKING A DUCTED SHEET ASSEMBLY AND COMPOSITE ARTICLE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of application Ser. No. 780,801, Dec. 3, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 432,033, Nov. 25, 1964, now Patent No. 3,414,863, which in turn is a continuation-in-part of application Ser. No. 589,848, May 28, 1956, now Patent No. 3,166,829. This application Sept. 27, 1971, Ser. No. 184,298

Int. Cl. C03b *23/02*

U.S. Cl. 65—54 5 Claims



A method for producing a composite ducted sheet or panel as provided and a new and improved article of manufacture producted by said method. The method involves the expansion of selected portions of a sheet or panel assembly while they are at elevated temperature and in an easily expandable condition to provide a duct for conduit portion or portions of said sheet or panel which may serve to conduct or retain certain fluids such as gases therein. In one form, the sheet or panel is made of a ceramic material such as glass or silica which is provided at its softening temperature and is expanded with one or more vein-like duct formations therein either in a mold or without the benefit of a mold whereby expansion is controlled by control of the fluid pressure and/or the temperature of the material. The invention is also directed to new and improved articles of manufacture produced by the methods described including electrical signs of the neon or argon type.

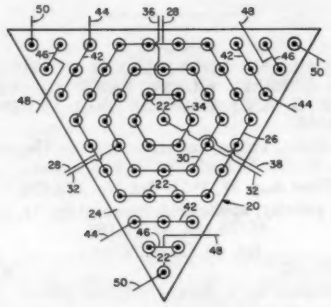
3,743,494
HEADER SYSTEM FOR FORMING MULTI-BORE TUBING

Carl D. Andrysiak, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of application Ser. No. 765,495, Oct. 7, 1968. This application Feb. 5, 1971, Ser. No. 113,003

Int. Cl. C03b 5/26, 15/14

U.S. Cl. 65—126 8 Claims



Multiple-bore tubing having uniform bore sizes and wall thicknesses is formed by drawing molten glass downwardly through a multiple bell orifice structure having a header system arranged substantially concentrically about the center of the orifice structure which provides blowing air at desired differential pressures to various concentric arrays of bells to form uniform multiple bore tubing with an open frontal area of up to about 80 percent of the cross-sectional area of such tubing.

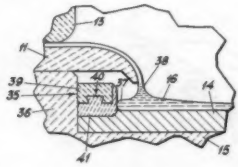
3,743,495
APPARATUS FOR PRODUCING FLOAT GLASS

Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of abandoned application Ser. No. 743,205, July 8, 1968. This application Apr. 12, 1971, Ser. No. 133,394

Int. Cl. C03b 19/02

U.S. Cl. 65—182 R 4 Claims



This invention pertains to treatment of a buoyant body of molten glass at the entrance end of a float glass forming apparatus, and involves the use of a spacer tile provided with a glass contacting surface that will not stick to the molten glass.

3,743,496
TREATMENT OF ANIMAL AND FOWL LITTER AND FECES

William Seltzer, Vineland, N.J., assignor to Vineland Laboratories, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 755,785, Aug. 28, 1968. This application Dec. 13, 1971, Ser. No. 207,543

Int. Cl. C05f 3/00

U.S. Cl. 71—21 7 Claims

The invention provides a method of treating animal and fowl litter, feces and guano with formaldehyde or formaldehyde-yielding compounds in the presence of poultry or livestock to suppress the bacterial content and the formation of ammonia in the feces and litter resulting in a product with increased and long-acting nitrogen for use as a fertilizer. The formaldehyde, which is preferably used in its solid form, paraformaldehyde, can be mixed with additives such as turpentine, pine oil, thymol, camphor oil, Patchouli oil, crystal violet, gentian violet, methylene blue, and a combination of methyl orange and bromthymol blue to obtain special effects, such as preventing natural wildlife or other animals and fowl from being attracted to and consuming the formaldehyde, and masking the odor of the formaldehyde.

3,743,497
N-POLYHALOVINYLTHIO UREAS AS AQUATIC HERBICIDES

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Jan. 7, 1969, Ser. No. 789,596, now Patent No. 3,652,630. Divided and this application June 28, 1971, Ser. No. 163,523.

Int. Cl. A01n 9/12

U.S. Cl. 71—66 4 Claims

Ureas of the formula

$$RNH-\overset{O}{\overset{\|}{C}}-NH-S-C_2X_aH_{(3-a)}$$

in which R is hydrogen, hydrocarbyl radicals of 1 to 15 carbon atoms which are free of aliphatic unsaturation and have 0 to 3 halogen substituents, X is Cl or Br and *a* is 2 or 3. These ureas are biologically active against fungi and aquatic weeds.

3,743,498
METHOD OF SELECTIVELY CONTROLLING UNDESIRABLE VEGETATION

Richard Kirven Brantley, Wilmington, Del, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Originial application Oct. 31, 1967, Ser. No. 679,565, now Patent No. 3,547,940, dated Dec. 15, 1970. Divided and this application Aug. 14, 1970, Ser. No. 63,923.

Int. Cl. A01n 9/00

U.S. Cl. 71—88 12 Claims

Disclosed is a method of selectively controlling unwanted vegetation wherein an herbicidal composition comprising certain substituted ureidoisoxazole is applied to the locus of the vegetation, either pre-emergence or post-emergence.

3,743,499
METHOD OF ENLARGING THE PARTICLE SIZE OF TRANSITION METAL POWDER AND CARBIDES THEREOF

Lars Henry Ramqvist, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,551

Int. Cl. B22f 9/00; C01b 31/30, 31/34

U.S. Cl. 75—0.5 BB 9 Claims

The particle size of transition metal powder selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo and W is enlarged by heating said powder at an elevated particle growth-promoting temperature by mixing intimately with the powder a metal doping additive consisting essentially of a particle growth-promoting element selected from the group consisting of Cu, Ag, Au, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir and Pt. Carbide particles of the transition metals can be enlarged during the carburization of the transition metal at elevated temperatures in excess of 1000° C. at which the transition metal reacts with carbon to form the carbide.

3,743,500

NON-POLLUTING METHOD AND APPARATUS FOR PURIFYING ALUMINUM AND ALUMINUM-CONTAINING ALLOYS

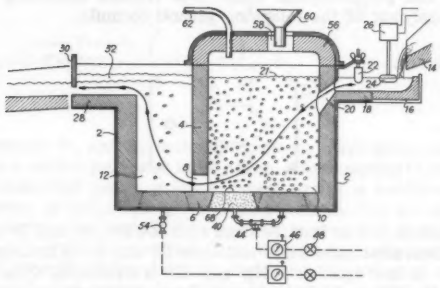
Jean Foulard, Ablon, and Jean Galey, Saint-Maur-des-Fosses, France, assignors to L'Air Liquide Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of abandoned application Ser. No. 782,040, Dec. 9, 1968. This application Nov. 22, 1971, Ser. No. 201,149

Claims priority, application France, Jan. 10, 1968, 135,515

Int. Cl. C22b *21/00, 45/00, 9/02*

U.S Cl. 75—93 17 Claims



To degasify aluminum and aluminum alloys, a ladle is provided with two compartments interconnected by a bottom passage. Inert gas is insufflated in very fine bubbles into the lower portion of both compartments. The molten metal flows down the upstream compartment, then flows up the downstream compartment. There is no inner impediment in the compartments, nor in the passage.

3,743,501

ZINC RECOVERY PROCESS

Dominic C. Cusanelli, South Plainfield, Lamar D. Coffin, Edison, and Harold P. Rajcevic, Colonia, N.J., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Aug. 17, 1971, Ser. No. 172,493

Int. Cl. C22b *3/00*

U.S. Cl. 75—109 11 Claims

An improved process for the hydrometallurgical recovery of zinc from oxidic lead-containing zinciferous material is provided wherein the improvement resides in selectively leaching the lead from said oxidic material by means of a relatively dilute solution of alkali metal hydroxide (e.g. NaOH) at an elevated temperature and at superatmospheric pressure sufficient to remove a substantial portion of the lead from the oxidic material and leave a residue enriched in zinc which may thereafter be recovered in any suitable manner.

3,743,502

PROCESS OF PREPARING FINE-GRAINED BLENDS OF LEAD WITH COPPER OR ALUMINUM

Ernest Hey, Eureka, Calif., assignor to Helen B. Sherry, Seattle, Wash.

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,785

Int. Cl. C22c *1/02, 1/06*

U.S. Cl. 75—135 14 Claims

Fine-grained alloys of metals such as lead and copper or lead and aluminum are made by melting the individual metals separately under reduction conditions and mixing them intimately under reduction conditions and then casting them or extruding them immediately thereafter.

3,743,503

ELECTRO-PHOTOGRAPHIC PROCESS USING A LIQUID DEVELOPER CONTAINING A POLYMERIC DYE

Martin Goldman, Jerusalem, Israel, and Stewart H. Merrill, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,826

Int. Cl. G03g *13/00, 13/12*

U.S. Cl. 96—1 8 Claims

Liquid developer compositions for use in developing electrostatic charge patterns are formed of an electrically insulating organic carrier liquid having dispersed therein marking particles comprised of a polymeric dye having a linear backbone chain to which are attached pendant side chains containing a chromophoric moiety.

3,743,504

DEVELOPER SCAVENGERS FOR IMAGE TRANSFER SYSTEMS

Glen M. Dappen, Webster, Donald A. Smith, Irondequoit, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,138

Int. Cl. G03c *7/00, 5/54, 1/60*

U.S. Cl. 96—3 27 Claims

A developer scavenger layer comprising an aldehyde-bisulfite addition product and a polymeric binder is useful for reducing background stain in a dye image-receiving element of a color diffusion transfer system utilizing immobile couplers which form diffusible dyes.

3,743,505

DIRECT-PRINT PROCESS UTILIZING PHOTOSENSITIVE POLYACETYLENIC AMINE SALTS CONTAINING CARBOXYLATE MOIETIES

Melvin S. Bloom, Rochester, and Sally S. Fico, Bergen, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 14, 1971, Ser. No. 153,059

Int. Cl. G03c *5/24, 1/00*

U.S. Cl. 96—48 R 11 Claims

Amine salts of polyacetylenic compounds containing a carboxylate moiety, preferably in conjunction with a group capable of hydrogen bonding, have unusually high radiation sensitivity, and are useful radiation-sensitive components in imaging systems.

3,743,506

PHOTOGRAPHIC COLOUR MATERIAL

Carlo Boragine, Route de la petite Fin 6, and Armin Meyer, Chemin du petit Rhone 36, both of Fribourg, Switzerland

Filed July 7, 1971, Ser. No. 160,561

Claims priority, application Switzerland, July 7, 1970, 10,266/70

Int. Cl. G03c *1/76*

U.S. Cl. 96—73 21 Claims

A process for the manufacture of a photographic colour image which comprises exposing image-wise and proc-

essing in the presence of a dye bleach catalyst, a photographic material containing at least one silver halide emulsion layer containing a diffusion-resistant bleachable

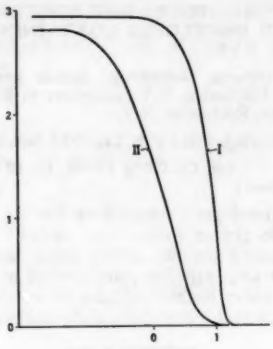


image dyestuff and immediately above and below said layer, two silver halide emulsion layers, free of image dyestuff, as well as a photographic material containing said layers are disclosed.

3,743,507

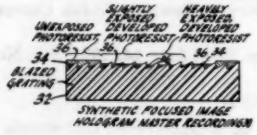
RECORDING OF A CONTINUOUS TONE FOCUSED IMAGE ON A DIFFRACTION GRATING

Charles Chung Sen Ih, Trenton, and Michael Jay Lurie, East Brunswick, N.J., assignors to RCA Corporation

Original application Oct. 23, 1970, Ser. No. 83,424, now Patent No. 3,669,673. Divided and this application Nov. 8, 1971, Ser. No. 196,295

Int. Cl. G03c *1/84*

U.S. Cl. 96—81 **4 Claims**



A recording medium blank is employed comprising a substrate having a diffraction grating, composed of a plurality of spaced line ridges, on a surface thereof, together with a photoresist disposed on this surface which fills the spaces between adjacent line ridges. This provides a substantially smooth exterior surface of the photoresist which is situated in proximity with the respective tops of the line ridges making up the diffraction grating. By exposing such a recording blank to a focused image of any complex object and then developing the photoresist, a diffraction grating with modulated efficiency is formed, constituting a synthetic focused image hologram; which displays the original focused image when properly viewed. A stamping master, which can be prepared from this modulated grating record, is useful in embossing replications on thermoplastic material, such as vinyl for instance.

3,743,508

RADIATION SENSITIVE FILMS COMPRISING A POLYPHENYLENE OXIDE BASE

Robert F. Williams, Jr., Webster, and Edward D. Morrison, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

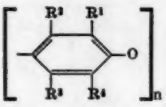
No Drawing. Continuation-in-part of application Ser. No. 34,565, May 4, 1970, which is a continuation-in-part of application Ser. No. 693,176, Dec. 26, 1967, both abandoned. This application May 24, 1971, Ser. No. 146,437

Int. Cl. G03c *1/78*

U.S. Cl. 96—87 R **13 Claims**

Radiation sensitive films comprising a polyphenylene oxide base having a radiation sensitive reagent dispersed therein or formed thereon.

The polyphenylene oxide base consists essentially of a polymer of the following general formula:



wherein *n* is at least 100 and each R^1, R^2, R^3, and R^4 is a monovalent substituent and each R^2 and R^3 is hydrogen, R^1 is hydrogen or CH_3, and R^4 is hydrogen, CH_3 or C_2H_5. When R^1 is hydrogen, R^4 is hydrogen.

3,743,509

o-AMINOMETHYL-p-PHENYLENEDIAMINES AND DIAZONIUM SALTS THEREOF

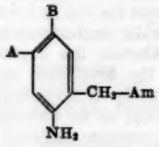
Evan S. Baltazzi, Brookfield, and Helen C. Printy, Palatine, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

No Drawing. Continuation-in-part of application Ser. No. 627,300, Mar. 31, 1967. This application July 20, 1970, Ser. 56,720

Int. Cl. C07c *113/04*; G03c *7/54*

U.S. Cl. 96—91 R **7 Claims**

Amines, and corresponding diazonium salts which are useful in unusually fast light-sensitive diazotype copying sheets, having the general formula



wherein A is hydrogen, hydroxyl, alkoxyl, halo, or alkoxyalkoxyl; B is a tertiary amino radical containing from 2 to 8 carbon atoms, either cyclic, such as morpholino, hexamethylenimino, azabicyclononyl, pyrrolidino, piperidino or dialkyl substituted; and Am is a tertiary amino radical such as a dialkylamino, alkylarylamino, alkylcycloalkyl, or one of the radicals represented by B.

ERRATUM

For Class 96—124 see:
Patent No. 3,743,517

3,743,510
OPTICAL SUPER-SENSITIZED SILVER HALIDE EMULSION

Yoshiyuki Nakazawa, Nobuo Tsuji, Masao Sawahara, and Nasanao Hinata, Minami-Ashigara Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

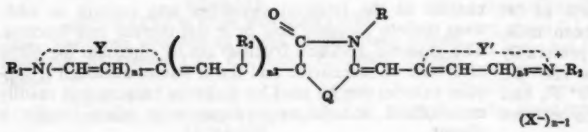
No Drawing. Continuation-in-part of application Ser. No. 605,952, Dec. 30, 1966. This application Sept. 22, 1970, Ser. No. 74,483

Claims priority, application Japan, Dec. 30, 1965, 40/81,697

Int. Cl. G03c *1/10*

U.S. Cl. 96—123 10 Claims

A sensitized photographic silver halide emulsion is prepared by incorporating a dye of the general formula set out below and a Formalin condensate into the silver halide emulsion.



(I)

wherein R_1 and R_2 each represents an alkyl group, such as, a methyl group, an ethyl group, β-hydroxyethyl group, β-sulfoethyl group, a γ-sulfopropyl group, a δ-sulfobutyl group, propylsulfate group, etc.; a carboxyalkyl group or a derivative thereof, such as a carboxymethyl group, a β-carboxyethyl group, a 2-(2-carboxyethoxy) ethyl group, etc.; a sulfoalkyl group or a derivative thereof, such as a β-sulfoethyl group, a γ-sulfopropyl group, a δ-sulfobutyl group, a 2-hydroxy-1-sulfopropyl group, a 2-(3-sulfopropoxy)-ethyl group, a 2 - acetoxy - 1 - sulfopropyl group, 3 - methoxy - 2 - (3 - sulfopropoxy)-propyl group, 2 - (2 - (3 - sulfopropoxy)ethoxy)ethyl group, 2-hydroxy - 3 - (3′ - sulfopropoxy)propyl group, etc.; an allyl group; an aryl group; a substituted aryl group; or an aralkyl group R represents an alkyl group or an aryl group, R_3 represents a hydrogen atom, an alkyl group or an allyl group, Y and Y′ each represents an atomic group necessary for forming a heterocyclic ring, Q represents an oxygen atom or sulfur atom, X represents an anion, *n* is 1 or 2, said *n* being 1 when the dye forms an intramolecular salt and n_1, n_2 and n_3 each is 0 or 1.

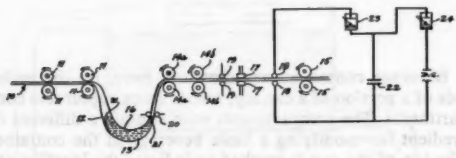
3,743,511
MEATLESS SAUSAGE

Joseph L. Stefanec, 331 East 89th Street, New York, N.Y.

Continuation of Ser. No. 677,200, Oct. 23, 1967, abandoned. This application Feb. 8, 1971, Ser. No. 113,754

Int. Cl. A22c *13/00*; A23l *1/00*

U.S. Cl. 99—1 10 Claims



Sausage casing is perforated by means of electric discharge. A non-meat dehydrated filling is inserted in the porous casing the ends of which are closed to contain the filling. The pores of the casing are closed by applying a coating composition consisting of an edible oil and glycerol triacetate to the exterior of the casing. Upon soaking in water, the oil is loosened from around the pores and the water permeates the casing and hydrates the filling.

3,743,512
MONOGLYCERIDE PRODUCT AND METHOD OF PREPARING THE SAME

Francis Frederick Hansen, 224 E. Poplar Street, Walla Walla, Wash.

Continuation-in-part of Ser. No. 688,024, Dec. 5, 1967, abandoned. This application Sept. 16, 1970, Ser. No. 72,802

Int. Cl. A21d *2/16*

U.S. Cl. 99—91 8 Claims

Hard distilled monoglyceride either along or in combination with other modifiers in a ground-up condition is mixed with wheat starch or other dry particles and the mixture reduced to an impalpable powder in a fluid energy impact type of mill to an average fineness of less than 10 microns. In this process the starch or other dry particles become coated or smeared with a film of the monoglyceride. The preferred material is 50 percent distilled monoglyceride and 50 percent wheat starch or wheat flour. Fifty percent of monoglyceride used in this way is superior to 100 percent finely ground monoglyceride produced in the same fashion. About 1 percent of the preferred product is used in a standard bread formula to each 100 lbs. of flour.

3,743,513
BLEND OF VACUUM AND REVERSE OSMOSIS FRUIT JUICE CONCENTRATES

Marshall P. Tulin, Bethesda, Md., assignor to Hydronautics, Incorporated, Laurel, Md.

No Drawing. Filed June 18, 1971, Ser. No. 154,638

Int. Cl. A23b *7/02*; A23l *1/02*

U.S. Cl. 99—105 12 Claims

A process for producing a fruit juice concentrate capable of speedy reconstitution by addition of water to make a cold drink having a substantial portion of the original aroma, flavor and palatability of fresh fruit juice comprising concentrating whole fruit juice under vacuum, and blending the vacuum concentrated juice with a concentrated fruit juice prepared by reverse osmosis to form a full flavored concentrate.

3,743,514
HYDROLYSATE OF COLLAGEN AS A SAUSAGE INGREDIENT

Floyd C. Olson and Jack C. Trautman, Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

No Drawing. Continuation of application Ser. No. 74,178, Sept. 21, 1970. This application Sept. 14, 1972, Ser. No. 289,117

Int. Cl. A22c *11/00*

U.S. Cl. 99—109 8 Claims

Water-soluble, low free-amino acid, non-gelling hydrolysate of collagen is used as low-cost, high protein ingredient in the manufacture of sausage, imitation sausage and loaves.

3,743,515
PREPARATION OF BLUE CHEESE FROM SOYBEAN MILK

Erik Lundstedt, South Chatham, Mass., and Frank Yau-Yee Lo, Kwun Tong, Hong Kong, assignors to The Hong Kong Soya Bean Products Co., Ltd., Kwun Tong, Kowloon, Hong Kong

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,200

Int. Cl. A23c *19/02*

U.S. Cl. 99—116 6 Claims

A blue cheese with the same flavor, taste, and blue veins as Roquefort cheese, is made from a soya bean curd which is prepared from soya bean milk fortified with butter fat and non-fat milk solids, by inoculation with *penicillium*

roqueforti and preferably also *Streptococcus diacetilactis*. Mold ripening only requires a two week period for full flavor development.

3,743,516
PREPARATION OF CHEESE FROM SOYBEAN MILK

Erik Lundstedt, South Chatham, Mass., and Frank Yau-Yee Lo, Kwun Tong, Hong Kong, assignors to The Hong Kong Soya Bean Products Co., Ltd., Kowloon, Hong Kong

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,207
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 **15 Claims**

A new curd from soya bean milk which is heat-stable, suitable for the preparation of a meltable cheese by the hot-pack process, is prepared by adding 1–10% of fat and 0.5–5.0% of skim milk solids to soya bean milk, pasteurizing, homogenizing, forming the curd, preferably by lactic acid bacteria, at a temperature below 120° F., heating to a temperature between 140° and 170° F., and draining until the moisture content of the curd is between 60 and 80%.

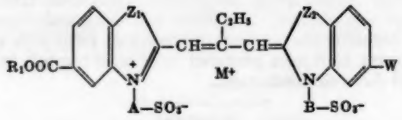
3,743,517
PHOTOGRAPHIC SILVER HALIDE SUPERSENSITIZED EMULSIONS

Yoshiyuki Nakazawa, Yashuharu Nakamura, Haruo Takei, Akira Saio and Tadashi Ikeda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,807
Claims priority, application Japan, Apr. 2, 1970, 45/28,168
U.S. Cl. 96—124 **7 Claims**

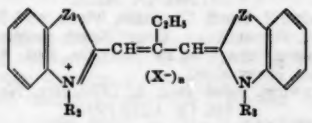
A photographic silver halide supersensitized emulsion comprising at least one spectral sensitizing dye represented by the following general Formula I and at least one spectral sensitizing dye represented by the general Formula II:

(I)



wherein Z_1 and Z_2 each represent a member selected from the group consisting of sulfur and a selenium atom, R_1 represents a member selected from the group consisting of a hydrogen atom, and a lower alkyl group, W represents a member selected from the group consisting of a hydrogen, a halogen atom, a lower alkyl group, an alkoxy group, a hydroxy group, and an aryl group, A and B each represent a member selected from the group consisting of a polymethylene and an alkyl polymethylene group, and M^+ represents a member selected from the group consisting of a hydrogen cation, a metal cation and an organic amine cation,

(II)



wherein Z_3 and Z_4 each represent a member selected from the group consisting of a sulfur and a selenium atom, R_2 and R_3 each represent a member selected from the group consisting of a lower alkyl and substituted alkyl group, X^- represents an anion, and n is 0 or 1, said n being 0 when the dye forms an internal salt.

3,743,518
ARTIFICIAL SWEETENER COMPOSITION

Marvin E. Eisenstadt, Belle Harbor, N.Y., assignor to Cumberland Packing Corp., Brooklyn, N.Y.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,516
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 A **4 Claims**

The invention relates to new artificial sweetener compositions, and more particularly artificial sweetener compositions which have no bitter aftertaste, can be used freely by diabetics and are non dairy. The artificial sweetener compositions of the present invention utilize saccharine as the artificial sweetener and contain as additives thereto gluconic acid or a salt thereof and fructose. The gluconic acid and fructose act to eliminate the bitter aftertaste of saccharine and the fructose, although it supplies calories can be used by diabetics because it is readily metabolized and forms glycogen even when insulin is absent.

3,743,519
ACID STABILIZATION OF MEAT BASED FOODS

Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.

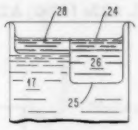
No Drawing. Continuation-in-part of applications Ser. No. 827,030, May 22, 1969, and Ser. No. 829,720, June 2, 1969. This application July 30, 1970, Ser. No. 59,665
The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed
Int. Cl. A23b *1/12*
U.S. Cl. 99—159 **1 Claim**

The invention relates to the use of caproic, caprylic and levulinic acid combined with a sorbic acid compound, and mixtures thereof, as antimycotics to preserve foods characterized by high degrees of palatability, nutrition and caloric value.

3,743,520
COMPARTMENTED BEVERAGE CONTAINER

Jerome T. Croner, Millbrook, N.Y.
(Fowler Road, Salt Point, N.Y. 12578)

Filed Sept. 3, 1971, Ser. No. 177,637
Int. Cl. B65b *29/10*
U.S. Cl. 99—171 B **5 Claims**



Beverage containers are shown to have, on the underside of a portion of a can top, one or more rupturable compartments. The compartments each contain a different ingredient for modifying a basic beverage in the container. The top of the can is marked to indicate the location and contents of each compartment and where rupturing of the top provides access only to the basic beverage. The bottom wall of a compartment may be positioned such that rupturing of the top of the beverage can over the compartment with an ordinary can opener will also rupture the bottom of the underlying compartment to allow entry of the modifying ingredient into the beverage in the can. The bottom of a compartment may be positioned so as not to be ruptured by a can opener providing access to the modifying ingredient through the top of the can.

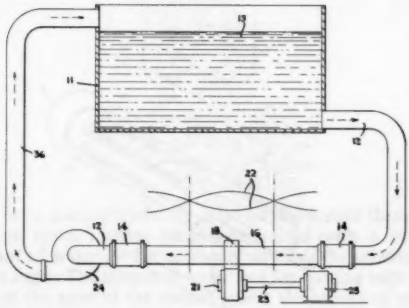
3,743,521
COATED FIBROUS SAUSAGE CASING
Jerome J. M. Rasmussen, South Stickney Township, Ill., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,600
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 4 Claims

A fibrous sausage casing particularly suited for use with sausage of the moist type, such as liver sausage, has an internal coating of a cationic thermosetting resin and an exterior coating of a vinylidene resin. The casing inhibits the accumulation of fat and/or gelatin between the sausage and the casing despite instability of the sausage emulsion.

3,743,522
CONTAINER FOR FOODSTUFFS
Yoshio Nagasawa and Shunji Yano, Sagamihara, Japan, assignors to Daiwa Can Co. Ltd., Chuo-ku, Tokyo, Japan
Filed Nov. 20, 1970, Ser. No. 91,372
Claims priority, application Japan, Nov. 27, 1969, 44/94,676
Int. Cl. B65B
U.S. Cl. 99—181 R 2 Claims

A container for packing vegetables, fruits, tomato and orange juices, and like foodstuffs in which an adhesive tape is attached to the inner surface of the container body to inhibit corrosion in the container, the tape being made of synthetic resin and embodying therewith metallic tin in foil and/or powder form in an amount sufficient to prevent the foodstuff contents of the container from discoloring during storage.

3,743,523
METHOD FOR THE SONIC TREATING OF FOOD MATERIAL
Albert G. Bodine, 7877 Woodley Avenue, Van Nuys, Calif.
Division of Ser. No. 11,137, Feb. 13, 1970, abandoned. This application Aug. 4, 1971, Ser. No. 169,059
Int. Cl. A23l *3/30*
U.S. Cl. 99—217 1 Claim



High level sonic energy is utilized to generate elastic pressure pulses in a liquid in which food material is immersed. The sonic energy causes the material to be efficiently worked with the liquid, thus facilitating processes requiring liquid working such as cooking and soaking.

3,743,524
REFRACTORY MASS
Lennart Andersson, Saltsjo-Boo, Sweden, assignor to Strabruken AB, Villagatan, Stockholm, Sweden
No Drawing. Filed July 26, 1971, Ser. No. 166,263
Claims priority, application Sweden, Aug. 3, 1970, 10,633
Int. Cl. C04b *35/04, 35/06*
U.S. Cl. 106—58 6 Claims

A refractory ceramic mass which is mixable with water, consisting of a graded mixture of grains of one or more refractory materials, characterized in that at least a portion of the finest fractions having a maximum grain size of about 0.1 mm. consists of burnt dolomite and that there is included in the mixture a water soluble hydration retarding agent (such as powdered natrium silico fluoride) which prevents or sufficiently retards a reaction between the finest grains of burnt dolomite and the added water.

3,743,525
HYDRAULIC CEMENTS FROM GLASS POWDERS
Robert J. Farrauto, Painted Post, and William L. Haynes, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,410
Int. Cl. C04b *7/00*
U.S. Cl. 106—74 8 Claims

The present invention relates to the production of hard, strong, easily prepared hydraulic cements from glass powders in the general composition field R_2O—RO—SiO_2, wherein R_2O consists of Na_2O and/or K_2O and RO consists of MgO, CaO, SrO and/or BaO. The addition of the $H_2PO_4^-$ anion to the glass powders greatly improves the compressive strength of the resultant cement and, in frequent instances, shortens the required setting time for the cement.

3,743,526
DRY PIGMENT PREPARATIONS AND PROCESS FOR THEIR MANUFACTURE
Guenther Zwahlen, Dornach, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation of application Ser. No. 832,005, June 10, 1969. This application Jan. 26, 1972, Ser. No. 221,085
Claims priority, application Switzerland, June 14, 1968, 8,834/68
Int. Cl. C08b *27/04, 27/14;* C08f *45/02*
U.S. Cl. 106—193 R 8 Claims

Preparations containing at least one water-insoluble dyestuff and/or at least one optical brightener and at least one polyhydroxylated organic compound esterified with at least one polybasic inorganic acid, especially a cellulose sulfuric acid ester, are useful for pigmenting aqueous solutions.

3,743,527
PARTICLE-SIZE MODIFIED PIGMENTS AND METHOD OF INCREASING PIGMENT DISPERSIBILITY
Orlando Leonard Bertorelli, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.
No Drawing. Original application Nov. 17, 1969, Ser. No. 877,469. Divided and this application May 27, 1971, Ser. No. 147,665
Int. Cl. C09c *1/28*
U.S. Cl. 106—309 2 Claims

An oil or latex emulsion introduced into a system with a non-crystalline, insoluble synthetic pigment wet filter

cake prevents or reduces the growth of ultimate pigment aggregate sizes when the water leaves a hydrogel type pigment by thermal action. Oil or latex may reduce the aggregate structure which is normally obtained by conventional thermal drying. The resulting pigmentary materials may be used in rubber and paint.

3,743,528

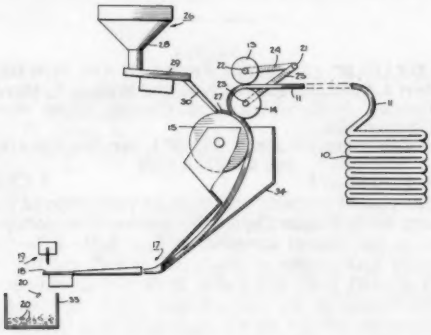
METHOD AND APPARATUS FOR IMPREGNATING FIBROUS FILTER MATERIAL

Donald A. Calleson, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,834

Int. Cl. B44c *1/08*

U.S. Cl. 117—9 16 Claims



The filter material is deposited onto the rotating delivery roller prior to entry of the travelling web of tow between the nip of the driven roller and idler roller so that the filter material is forced into the web upon passing through the nip. The embedding of the filter material into the web in the nip serves to distribute the material more uniformly through the cross-section of the tow before the tow is gathered together and formed into a rod.

3,743,529

METHOD FOR RENDERING DIFFICULTLY DYEABLE MATERIAL OR FABRIC DYEABLE AND PRODUCT

Ray D. Ramsay, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,254

Int. Cl. D02j *3/00;* D03d *21/00;* D04h *3/12*

U.S. Cl. 117—21 3 Claims

A difficultly dyeable material or fabric is rendered readily dyeable by causing adherence to the same of a dyeable powder, for example, by fusing the powder to the surface of the material or fabric by heat and/or pressure. In one embodiment a carpet backing made of nonwoven polypropylene is rendered dyeable by depositing a dye receptive polyester or polyamide or other material on one or both sides of the fabric and fusing the powder to the surface as herein described.

3,743,530

METHOD OF PRODUCING SHEET MATERIAL HAVING MICRO-POROUS STRUCTURE

Saburo Oohara, Kyoto, and Masahiro Takeuchi, Kasai, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 13, 1970, Ser. No. 54,584

Claims priority, application Japan, July 19, 1969, 44/57,192

Int. Cl. D06n *3/04*

U.S. Cl. 117—63 6 Claims

A tough and soft polyurethane film having a high moisture permeability and a uniform microporous structure is prepared by coating a base material with a water-miscible organic solvent solution of a synthetic polymer containing polyurethane, said solution also containing from 5–90% by weight of thiourea based on the weight of the polymer. The coated base material is then treated with an aqueous coagulating solution of an inorganic salt to coagulate the polymer and then washing and drying same.

3,743,531

PHOTOGRAPHIC PRODUCT

Gerald Louis Ducharme, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,050

Int. Cl. B41m *1/18;* C23c; D21k

U.S. Cl. 117—76 P 16 Claims

Photographic elements comprise a support having thereon, a layer containing barium sulfate, polyvinyl alcohol and an optical brightener such as a stilbene, anthracene, terphenyl, tetraphenylbutadiene or quinoxaline. Particularly useful brighteners are stilbene brighteners. The support can be comprised of paper or paper having the baryta layer overcoated with polyolefin coating such as polyethylene. These elements can be used as supports for receiving layers for use in the chemical transfer system and also as a support for silver halide emulsions or similar light sensitive coatings.

3,743,532

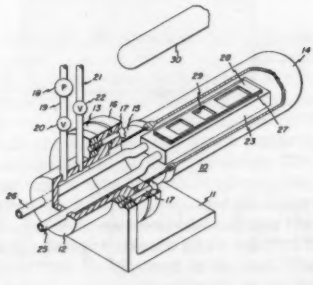
COATED SUBSTRATE FORMED FROM PHOTOPOLYMERIZED GAS

Archibald N. Wright, Schenectady, and Richard C. Merrill, Glen Falls, N.Y., assignors to General Electric Company

Original application Dec. 29, 1969, Ser. No. 888,524, now Patent No. 3,665,269. Divided and this application Jan. 31, 1972, Ser. No. 222,365

Int. Cl. C23c *13/00*

U.S. Cl. 117—93.31 1 Claim



Capacitors are provided having a first metal substrate, a dielectric film on such substrate and a second electrode

on the dielectric film which is made by the photopolymerization of certain photopolymerizable organic materials in vaporous form.

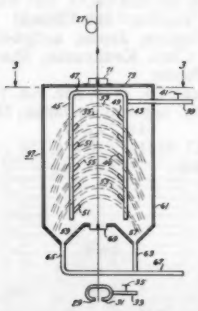
3,743,533
FLAME SPRAYING
George Yurasko, Jr., 40—40 172nd St., Flushing, N.Y. 11358
No Drawing. Filed Oct. 28, 1971, Ser. 193,594
Int. Cl. B44d *1/08*
U.S. Cl. 117—105.2 6 Claims

This invention relates to an improved flame spray powder. This improved flame spray powder has at least 30% by weight of its particles of a particle size finer than 50 mesh and coarser than 275 mesh.

3,743,534
PROCESS FOR SOFTENING FABRICS IN A DRYER
Pablo Perez Zamora, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Original application Apr. 28, 1969, Ser. No. 819,965, now Patent No. 3,632,396. Divided and this application Sept. 7, 1971, Ser. No. 178,436
Int. Cl. B05c *3/08*
U.S. Cl. 117—109 24 Claims

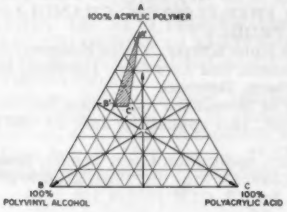
A process for softening fabrics in a clothes dryer comprising loading fabrics into a dryer, adding a length or sheet of fabric softening composition and operating the dryer at from about 75° F. to about 170° F. to effect softening of the fabrics, the fabric softening composition consisting essentially of a substrate having a substrate coating, which consists essentially of a substantially solid, waxy, cationic or nonionic material, and having a substantially solid outer coating comprising from 30% to 100% by weight of a fabric softener, wherein at least one of the coatings has a melting point equal to or less than about 170° F.

3,743,535
METHOD OF CONTINUOUSLY QUENCHING MOLTEN METAL COATINGS
George Padjen and Joseph A. Brugger, Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Filed Dec. 28, 1971, Ser. No. 213,143
Int. Cl. C23c *1/00*
U.S. Cl. 117—114 R 7 Claims



A wire passing upwardly after having passed through a molten metal coating bath is contacted with a moving stream of water jetting upwardly through the atmosphere at an angle. The stream of water and the moving wire meet just at the apex of the stream where the energy of movement of the water is least. The cooling stream of water thus causes a minimum disturbance of the still molten coating on the wire.

3,743,536
NONWOVEN SPONGE FABRIC
Gordon D. Russell, Chateauguay Heights, Quebec, Canada, assignor to Johnson & Johnson
Filed Feb. 20, 1970, Ser. No. 13,174
Claims priority, application Canada, Feb. 25, 1969, 43,961
Int. Cl. B32b *27/06*; D06m *15/00*
U.S. Cl. 117—138.5 15 Claims



An absorbent product of improved resistance to discoloration and blocking on sterilization. The product comprises a nonwoven fabric treated with a polycarboxylic acid, a polyvinyl alcohol and an acrylic acid polymer.

3,743,537
METHOD OF MAKING AN ELECTROPHOTOGRAPHIC RECORDING MEMBER
Satoru Honjo and Masaaki Takimoto, Asaki, and Tsuneo Kasugai, Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Kanagawa, Japan
No Drawing. Filed Oct. 14, 1970, Ser. No. 80,805
Claims priority, application Japan, Apr. 13, 1970, 45/8,716
Int. Cl. B44d *1/18*
U.S. Cl. 117—215 16 Claims

A method of manufacturing an electrophotographic paper comprising the steps of forming a smooth, electrically conductive barrier subcoating on a water-resistant layer provided on a paper base by applying to the water-resistant layer a treating mixture containing colloidal alumina, calendering the subcoating to improve the surface smoothness and uniformity, the colloidal alumina forming the subcoating being not less than 70% by weight of the dried subcoating; and then providing an electrophotographic light-sensitive layer on the smoothed subcoating.

3,743,538
METHOD OF ATTACHING AN ELECTRODE TO A SEMICONDUCTOR ELEMENT
Hans Mungaard, Langeso, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Sept. 16, 1970, Ser. No. 72,658
Claims priority, application Germany, Sept. 20, 1969, P 19 47 799.7
Int. Cl. B44d *1/18*
U.S. Cl. 117—221 6 Claims

A method of attaching an electrode to a semiconductor element comprising the steps of applying a contact

mixture to the semiconductor element and fusing the mixture to the element. The contact material comprises silver, titanium hydride and a readily oxidizable metal selected from the group consisting of zinc, aluminum, lead, tin and indium. The fusion temperature is above the temperature at which the hydride reduces the oxide of the oxidizable metal.

3,743,539

PROCESS AND APPARATUS FOR PRODUCING A FREE-FLOWING GRANULAR GLUCOSE PRODUCT

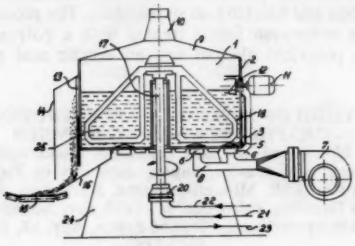
Karl Kristian Kobs Kroyer, Vestre Kongevej 80, Aarhus-Viby, Denmark, and Lars Olav Thomsen, Hojdedraget 3, Skanderborg, Denmark

Continuation of abandoned application Ser. No. 831,405, June 9, 1969. This application July 27, 1971, Ser. No. 166,602

Claims priority, application Great Britain, June 10, 1968, 24,289/68; May 13, 1969, 27,489/69

Int. Cl. C13f *1/02;* **C13k** *1/10*

U.S. Cl. 127—16 **18 Claims**



Process and apparatus for producing a free-flowing granular glucose product by supplying glucose solution to a glucose mass of temperature of 50–100° C., mechanically stirring the mixture of glucose solution and glucose mass, and removing the glucose product formed from the upper zones of the glucose mass.

3,743,540

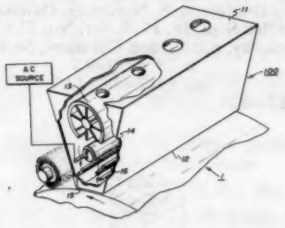
SURFACE CLEANING BY IONIZED FLOW

Frederick W. Hudson, 643 Brooks Road, West Henrietta, N.Y.

Continuation of Ser. No. 830,314, June 4, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,240

Int. Cl. G03g *13/00, 15/00*

U.S. Cl. 134—1 **9 Claims**



Method and apparatus for cleaning a residual toner powder image bearing surface after transfer of substantially all of a charged toner image therefrom to a support member. Fans or air pumps are utilized to direct a flow of ionized air to the surface to be cleaned. The ionized air is directed to the surface and neutralizes any charge on the residual particles remaining on the surface after image transfer to allow the particles to be readily removed. The ionization is produced by corona discharge, and illuminating means may also be included.

3,743,541

REDUCTION OF SOLID, LIQUID OR GASEOUS OXIDE-CONTAINING COMPOUNDS

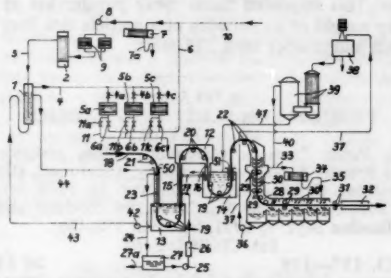
Albert Lichte, Wuppertal-Elberfeld, Germany, assignor to Scholemann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 13, 1968, Ser. No. 705,048

Claims priority, application Germany, Feb. 17, 1967, Sch 40255

Int. Cl. C23g *1/00;* **C22b** *1/10, 9/08*

U.S. Cl. 134—2 **5 Claims**



A method for the reduction of solid, liquid or gaseous oxide-containing compounds, particularly of oxidic coatings adhering to metal surfaces, by causing the said compounds to react with alkali metal hydride vapor in an atmosphere free from oxygen. The method includes steps for the recovery and re-use of the hydride.

3,743,542

PAINT REMOVING METHOD

Joseph Cooper, and William J. Corbett, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Division of Ser. No. 817,160, April 17, 1969, Pat. No. 3,629,004. This application May 28, 1971, Ser. No. 148,213

Int. Cl. B08b *7/00;* **C23g** *5/02*

U.S. Cl. 134—31 **10 Claims**

A method for removing paint from metal surfaces by boiling a solvent or solvent mixture and contacting the painted metal surface with the vapors of the solvent mixture.

3,743,543

SEPARATOR FOR CONTROLLING ALKALI METAL ION FLOW IN AN ELECTRODE ACTIVE MATERIAL OR ELECTROLYTE

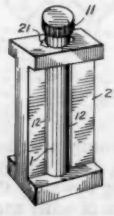
Takewo Chiku, Toyota, and Osami Kamigaito and Akio Isogai, Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Filed Sept. 29, 1970, Ser. No. 76,506

Claims priority, application Japan, Oct. 3, 1969, 44/79,447

Int. Cl. H01m *3/04;* **C22d** *3/02*

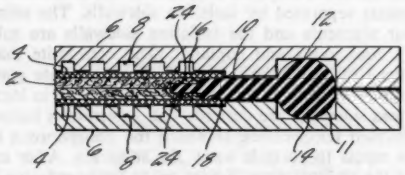
U.S. Cl. 136—6 FS **13 Claims**



A separator for use as the membrane separating electrode active materials in a sodium-sulfur cell, or electrolyte in a sodium hydroxide electrolyzer for producing

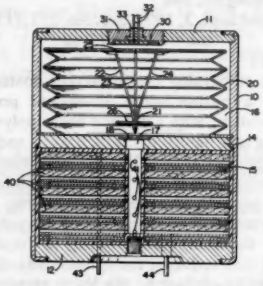
sodium, and comprising a partition made of alpha-alumina which is alkali resistant and electrically insulating, an opening formed in said partition and extending from side to side thereof, and a member made of beta-alumina crystal rotatably journaled in said opening, whereby the flow of alkali metal ions from one side of the partition to the other through said rotatable member is controlled by turning said member to change is conductivity.

3,743,544
FUEL CELL
Robert C. Stewart, Jr., West Suffield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 16, 1970, Ser. No. 98,793
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **5 Claims**



Means for sealing and unitizing a fuel cell are provided by a seal having an integral O ring on its outer edge for sealing between two coolant plates, the seal having a step-shaped inner edge spaced from said O ring by a supporting gasket, the inner edge being in mating contiguity with the edge of the matrix.

3,743,545
FLUID DISCHARGE DEVICE WITH DEFORMABLE LANCE
William C. Merz, Aldan, George J. Methlie, Centre Square, Rolf W. Sattler, Norristown, and Oleg S. Savinov, North Wales, Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed July 16, 1970, Ser. 55,518
Int. Cl. H01m *21/10*
U.S. Cl. 136—114 **4 Claims**



An improved activator mechanism for a reserve electrochemical battery. The battery is comprised of an activator section and a battery compartment separated from the activator section by a pierceable membrane. To activate the battery, the membrane, separating the two compartments, is pierced by a lance, allowing a liquid to flow from the activator section into the battery compartment. The lance is constructed of deformable materials so that upon piercing the diaphragm, the lance is bent and is prevented from further penetration into the battery compartment.

3,743,546
PREPARATION OF ELECTRODES CONTAINING METALLIC CHLORIDES AS ACTIVE MATERIALS FOR USE IN ELECTROCHEMICAL GENERATORS BY CHLORIDATION
Jean-Paul Gabano, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme) Pont de la Folie, Romainville, France
Filed July 30, 1970, Ser. No. 59,514
Claims priority, application France, July 31, 1969, 6,926,330
Int. Cl. H01m *35/02, 35/18*
U.S. Cl. 136—20 **18 Claims**

Preparation of electrodes containing metallic chlorides as active materials for use in electrochemical generators is effected by chloridation treatment of metal containing carrier bodies of copper or silver to chloridating compounds selected from the group consisting of thionyl, nitrosyl and carbonyl chlorides. The chloridation of the metal of the carrier body is effected either by immersion of the body in the liquid chloridating compound for determined periods of time, or by subjecting the carrier body to the action of the compound in gaseous phase, or in a diluted liquid or gaseous form for a slower rate of chloridation. Dilution of the liquid compound or dilution of it in gaseous phase reduces the rate of chloridation action effected by the compound on the metal content of the carrier body.

3,743,547
PROTECTION OF METALLIC SURFACES
Rosemary Green, 2 Pannal Ash Grove, Harrogate, England
Filed Oct. 23, 1970, Ser. No. 83,608
Claims priority, application Great Britain, Oct. 27, 1969, 52580/69
Int. Cl. C23f *7/06*
U.S. Cl. 148—6.27 **10 Claims**

Improved processes for applying aluminum coatings on substrates wherein aluminum is applied to the surface of the substrate and the aluminum surfaced substrate is then heated to a temperature in the range of 350°–450°C with adjacent aluminum surfaces at least in part in contact with other such surfaces. Commonly such aluminum surfaced substrates are placed in contact with each other either in the form of a closed coil or a stack. The improvement comprises applying to the said aluminum surfaced substrate prior to the heat treatment, a coating of an aqueous solution of an organic acid in an amount sufficient to give a dry coating of from 2 to 50 milligrams per square foot. The preferred organic acids are acetic acid, succinic acid, oxalic acid and malonic acid.

3,743,548
DISPERSION HARDENED METALS HAVING IMPROVED OXIDATION CHARACTERISTICS AT ELEVATED TEMPERATURE
Sanford Baranow, and Leo J. Klingler, both of Baltimore, Md., assignors to Cabot Corporation, Boston, Mass.
Filed May 6, 1971, Ser. No. 140,952
Int. Cl. C22c *19/00*
U.S. Cl. 148—32 **9 Claims**

Dispersion hardened metals based on nickel and containing from 8–35 percent of chromium (refractory oxides, such as thoria, are pervasively dispersed in the metal to harden the same) are modified by the inclusion of from about 2.5 to

about 5 percent of aluminum in order to provide improved oxidation resistance at elevated temperature while subjected to high velocity gases.

3,743,549
THERMOMECHANICAL PROCESS FOR IMPROVING THE TOUGHNESS OF THE HIGH STRENGTH ALUMINUM ALLOYS
Ettore Di Russo, Massimo Buratti, and Mario Conserva, Novara, Italy, assignors to Societá Per l'Esercizio Dell Istituto Sperimentale Metalli Leggeri, Milan, Italy
Filed June 7, 1971, Ser. No. 150,501
Claims priority, application Italy, Feb. 9, 1971, 20,309/71
Int. Cl. C22f *1/04*
U.S. Cl. 148—12.7 12 Claims

A thermomechanical process is disclosed for improving some secondary properties, such as ductility and toughness, of high strength heat-treatable aluminum alloys, containing one or more anti-recrystallizing elements, and in particular the alloys of the system Al-Zn-Mg-(Cu), without degrading their peculiar strength, the process comprising submitting the aluminum alloy, in the form of slab or billet and in its as-cast state, to a partial homogenization at a temperature between 300° and 430° C., for a soaking time of about 2 to 15 hours, followed by a first plastic deformation at a temperature ranging from 150° to 250° C., and by a rapid heating up to a temperature from ten to 20 centigrade degrees below the low melting point, the material being kept at this temperature for a time of about 10 to about 30 hours and afterwards being cooled in calm air and in then submitting the material to a second plastic deformation according to conventional cycles of rolling, extrusion or forging to the final product dimensions, said product being finally submitted to a solution heat treatment, quenching and ageing in one or more stages.

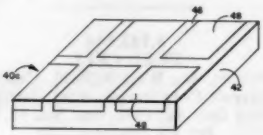
3,743,550
ALLOYS FOR MAGNETIC RECORDING-REPRODUCING HEADS
Hakaru Masumoto, Sendai; Yuetsu Murakami, Miyagi, and Masakatsu Hinai, Natori, all of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan
Filed June 17, 1971, Ser. No. 153,974
Claims priority, application Japan, June 25, 1970, 45/54759
Int. Cl. C04b *75/00*; H01f *1/04*; C22c *19/00*
U.S. Cl. 148—31.55 6 Claims

A ferromagnetic alloy of magnetic recording-reproducing heads, essentially consisting of 70.0 to 84.8 Wt.% of nickel, 5.0 to 25.5 Wt.% of iron, and 3.1 to 14.0 Wt.% of niobium, and having Vickers hardness of above 150 and a high initial permeability and a maximum permeability of above 3,000 and 5,000, respectively, and a degree of order greater than 0.1 but less than 0.6.

3,743,551
RAZOR BLADES AND METHODS OF MANUFACTURE THEREOF
Michael D. Sanderson, Egham, England, assignor to Wilkinson Sword Limited, London, England
No Drawing. Filed Apr. 14, 1971, Ser. No. 140,186
Claims priority, application Great Britain, Apr. 17, 1970, 18,409/70
Int. Cl. B26b *21/54*
U.S. Cl. 148—63 12 Claims

On a razor blade having at least one cutting edge there is provided a first coating of chromium, whose surface region may be oxidised, upon which is superposed a second coating of chromium nitride. A coating of a polymer which improves the shaving properties of the blade may be provided on the chromium nitride coating.

3,743,552
PROCESS FOR COPLANAR SEMICONDUCTOR STRUCTURE
Charles H. Fa, Newport Beach, Calif., assignor to North American Rockwell Corporation
Original application Oct. 18, 1967, Ser. No. 676,331, now abandoned. Divided and this application Jan. 30, 1970, Ser. No. 12,484
Int. Cl. H01l *7/34*, *7/50*, *19/00*
U.S. Cl. 148—175 3 Claims



A composite comprising a monocrystalline, electrically insulating substrate disposed atop which are semiconductor segments separated by isolation sidewalls. The semiconductor segments and the isolation sidewalls are substantially contiguous and coplanar. The composite may be produced by providing a film of phosphosilicate glass on a sapphire substrate. The glass is etched away in locations where sidewalls are desired. The substrate is heated to an elevated temperature at which the phosphorous in the glass reacts to corrode away the substrate. After removal of the residual glass, device grade semiconductor is deposited atop the substrate between the isolation sidewalls.

3,743,553
PN JUNCTIONS IN MERCURY CADMIUM TELLURIDE
Myrsyl Walter Scott, Minnetonka, and Arvid E. Kloek, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed June 18, 1971, Ser. No. 154,480
Int. Cl. H01l *7/62*
U.S. Cl. 148—188 7 Claims

PN junctions are formed in an N type body of mercury cadmium telluride by depositing a gold layer on a surface of the N type body and heating the body to diffuse the gold into the body, thereby forming a region of P type conductivity in the N type body.

3,743,554
NITROCELLULOSE PROPELLANT CONTAINING DIFFUSED LINEAR POLYESTER BURNING RATE DETERRENT
Dale F. Mellow, Stanhope, N.J., assignor to Hercules Incorporated, Wilmington, Del.
Filed Sept. 3, 1971, Ser. No. 177,813
Int. Cl. C06b *19/02*
U.S. Cl. 149—11 11 Claims

Manufacture of burning rate deterrent coated propellants by contacting a nitrocellulose smokeless powder, at an elevated temperature, with a defined linear polyester of a new class of burning rate deterrents, which wets, and diffuses into the smokeless powder at the elevated temperature level, as a plasticizer therefor, but is substantially non-migrating within the smokeless powder at lower temperatures; effecting the contacting step under conditions causing the polyester to coat and penetrate the smokeless powder to form the coated propellant; and then reducing the temperature of the resulting deterrent coated propellant to the lower temperature above described.

Also provided, are nitrocellulose smokeless powder propellants having as a burning rate deterrent, the defined polyester coating diffused by its own plasticizing action into the propellant to form a resulting burning rate gradient therefor.

3,743,555
EMULSIFIED HYDRAZINE-BASED FUEL COMPOSITION

Beverly A. H. Seaman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

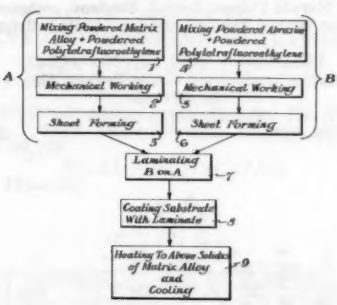
No Drawing. Filed July 18, 1968, Ser. No. 747,033
Int. Cl. C06c *1/02*
U.S. Cl. 149—36 9 Claims

The present disclosure concerns novel oleyl sarcosine-based emulsifying agents, and novel emulsions comprising said emulsifying agent, hydrazine and/or its derivatives and a hydrocarbon.

3,743,556
COATING METALLIC SUBSTRATE WITH POWDERED FILLER AND MOLTEN METAL

Ernest J. Breton, Jack D. Wolf, Dexter Worden, and John T. Bailey, Wilmington, Del., assignors to Composite Sciences, Inc., Wilmington, Del.

Filed Mar. 30, 1970, Ser. No. 23,907
Int. Cl. B32h *31/26;* B23p *3/10*
U.S. Cl. 156—62.8 12 Claims



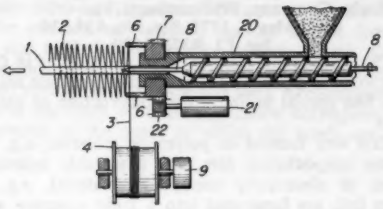
A process for coating a substrate within a thin coating composed of a filler dispersed in a metallic matrix wherein a film or sheet of a mixture of an organic binder and a filler which is wetted by the metallic matrix in the molten state, said filler comprising a powdered metal, intermetallic compound, abrasive or a mixture thereof is placed upon a surface or portion thereof of a substrate, a layer of matrix metal having a solidus temperature lower than either the substrate and the filler is placed contiguous to the film or sheet of the filler to produce an assembly which is heated to at least the solidus of the matrix metal and below the solidus temperatures of the substrate and filler and above the decomposition temperature of the binder whereby the molten metal infiltrates or infuses into the filler layer to give, upon cooling a thin coating of the metallic matrix filled with the filler. The process is useful for preparing coated substrates which have corrosion or wear resistance.

3,743,557
BRUSH AND METHOD OF MANUFACTURE

Christian Stöhr, Zeyern, and Klaus Grohmann, Dusseldorf, Germany, and Siegbert O. Wagner, Omaha, Nebr., assignors to Rayette-Faberge, Inc., New York, N.Y.

Filed Feb. 6, 1969, Ser. No. 797,013
Int. Cl. A46b *3/04*
U.S. Cl. 156—72 27 Claims

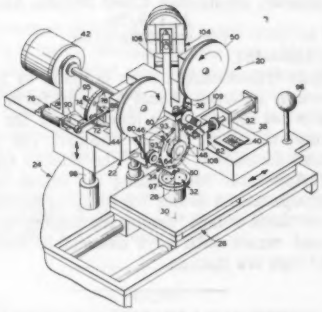
Brushes having a plastic core and radiating bristles are made by several techniques including impressing bristle filament loops, lengths or other configurations into the plastic core while in a plastic state. This may be accomplished by winding a filament about the core, pressing a filament into the surface of the core, penetrating the core with the end of the filament, entrapping filament between entwined plastic core strands twisted into a rod, or winding filaments about a mandrel to form both the core and bristle loops from the filament.



3,743,558
METHOD OF COMPLIANT BONDING

David P. Ludwig, Whitehall, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Original application Oct. 2, 1969, Ser. No. 863,259, now Patent No. 3,640,444. Divided and this application July 29, 1971, Ser. No. 167,532
Int. Cl. B32b *31/00;* B29c *27/00;* B23k *21/00*
U.S. Cl. 156—73 8 Claims



Compliant bonding of beam-lead devices such as integrated circuit chips is accomplished by engaging successive ones of the chips with successive portions of an apertured strip of a compliant bonding medium and bonding the chips to successive portions of substrates. A bonding head travels along a bonding axis both to pick up a chip from a tray and later to bond the chip to a substrate. After each bonding stroke a spent portion of the strip is removed from the bonding axis and a fresh portion is introduced onto the axis for the next bond.

In one illustrative embodiment the bonding head is in the form of a rotatable turret having a number of equally spaced tips projecting radially and outwardly therefrom. The strip is threaded around a portion of the circumference of the turret-like head. After each bond, the head is rotated until a different one of the tips and its associated portion of compliant strip are aligned with the bonding axis. Reels are provided to continuously supply and take-up the strip as progressive rotation of the head occurs. Each bond is thus made with an unspent portion of compliant bonding strip.

3,743,559
PRODUCTION OF LAMINATE FILAMENTS
Russell G. Duby, Robert E. Evans, James A. Gusack, and Sterling M. Nichols, Williamsburg, Peter J. Schoots, Nieuwendam, and Robert E. Smelser and Bernard B. Stephens, Newport News, Va., assignors to Dow Badische Company, Williamsburg, Va.
Filed May 3, 1971, Ser. No. 139,330
Int. Cl. B32b *5/00*
U.S. Cl. 156—177 **10 Claims**

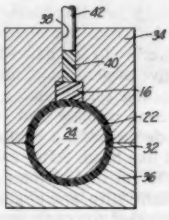
Disclosed is a process for producing laminate filaments which find special utility in the construction of antistatic fabrics.

A first web formed of polymeric material, e.g., polyethylene terephthalate film, and a tearable second web formed of electrically conductive material, e.g., aluminum foil, are laminated into a 2-ply structure with a string interposed between the plies in a path which traverses the width of the structure at least once. The string is subsequently torn from the structure in a manner which forms in the electrically conductive ply a void having a configuration coinciding with the path previously described by the string. Thereupon the laminate is slit in the direction of its length forming laminate filaments, each of the electrically conductive plies of which having at least one discontinuity along its length.

3,743,560
METHOD OF FORMING OPTICAL IMAGE TRANSMITTING DEVICES
Michael Christopher Ian Western, Leeds, England, assignor to The Rank Organisation Limited, London, England
Filed May 7, 1971, Ser. No. 141,116
Claims priority, application Great Britain, May 7, 1970, 22,139/70
Int. Cl. B29h *9/04*
U.S. Cl. 156—181 **12 Claims**

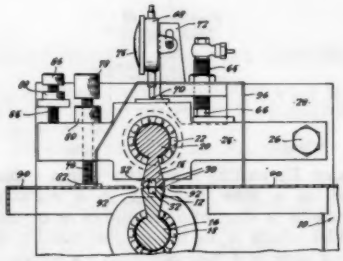
An image transmitting device is made by bringing together several separate optical fibres to form a flat tape. The tape is cut into separate lengths after the fibres have been caused to adhere to one another. The lengths are stacked and the ends at least of the stacked tapes bonded together. Apparatus for making the image transmitting device incorporates a device for bringing individual fibres together to form a tape, means for cutting the tape into lengths and means such as a channel in which the cut lengths of tape are stacked.

3,743,561
MANUFACTURE OF FIBER REINFORCED POLYMER ARTICLES
Robert D. Koontz, Manhattan Beach; Richard R. Heitkamp, and Robert E. Jackson, both of Compton, all of Calif.
c/o EFMC Corporation, 17923 S, Santa Fe, Compton, Calif.
Filed Oct. 28, 1970, Ser. No. 84,700
Int. Cl. B31c *13/00;* **B29d** *23/00*
U.S. Cl. 156—192 **2 Claims**



What are designated as "composite" fiber reinforced polymer (or plastic) articles or structures can be manufactured using what are termed "preformed" articles and "intermediate" articles. Such a preformed article may be created by compressing in a chilled die a mixture of reinforcing fibers and a hot melt polymer composition at a temperature at which the composition will flow but below the temperature at which the composition will set up or cure, removing the compressed article from the die and storing it at a low temperature at which it is dimensionally stable until it is ready to be used in a final manufactured article or structure. Such an intermediate article can be manufactured by winding a fiber sheet impregnated with a hot melt polymer composition on a mandrel while subjecting the sheet to pressure and to heat sufficient to cause the composition to flow but not to cure so as to form a dense structure. In the manufacture of a composite article, one or more of the preformed articles are located on an intermediate article and the resultant assembly is cured in a die under heat and pressure. Such preformed and intermediate articles can be cured separately or in contact with other articles by the application of heat and pressure.

3,743,562
PRODUCTION OF HEAT SEALS
Raymond Harold Phipps, Bristol, England, assignor to The Robinson Waxed Paper Company Limited, Bristol, England
Filed Dec. 4, 1970, Ser. No. 95,043
Claims priority, application Great Britain, Dec. 15, 1969, 61,057/69
Int. Cl. G01n *19/04*
U.S. Cl. 156—378 **4 Claims**

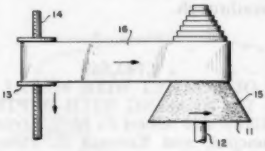


Apparatus for testing heat sealing conditions between sheet materials has a pair of co-operating heat sealing elements rotatably mounted about separate relatively radially displaceable axes. The temperature of the elements can be varied, and variable speed drive means allows the dwell time to be varied. The loading can be varied by adjustable stop means which limits the maximum displacement of the axes. Alternatively or additionally variable means can be provided for applying a force tending to urge the axes together. There may also be adjustable stop means for providing a minimum limit to the radial distance between the axes.

3,743,563
FEED MECHANISM AND CONICALLY-SHAPED MANDREL HAVING TACKY SURFACE FOR SUPPORTING WEB ON ITS EDGE
Dwin R. Craig, Gaithersburg, Md., assignor to Ingenuics, Inc., Gaithersburg, Md.
Filed Dec. 17, 1970, Ser. No. 99,131
Int. Cl. B32b *35/00*
U.S. Cl. 156—391 **3 Claims**

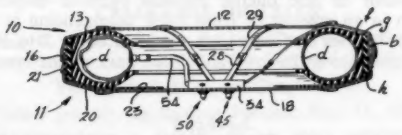
A method and apparatus for fixedly supporting a ribbon by creating a tacky surface on a generally conical body and then securing an end portion of the ribbon to the tacky surface of the body at the smaller end thereof with

the end edge of the ribbon parallel to the axis of the body. The body is then rotated with either the ribbon or the body being moved to cause the ribbon to wind spirally on the body with a side edge of the ribbon adhered



to the tacky surface. In the apparatus a mechanical connection between the apparatus for rotating the conical form and the apparatus for relatively moving the body with respect to the ribbon creates a uniform spiral of the ribbon on the body.

3,743,564
VALVE AND MEMBRANE APPARATUS FOR RECAPPING TIRE CASINGS
Jerome A. Gross, 6304 S. Rosebury, Clayton, Mo. 63105
Continuation-in-part of application Ser. No. 874,929, Nov. 7, 1969. This application Dec. 21, 1970, Ser. No. 99,756
Int. Cl. B29h *5/04, 17/36*
U.S. Cl. 156—394 **4 Claims**

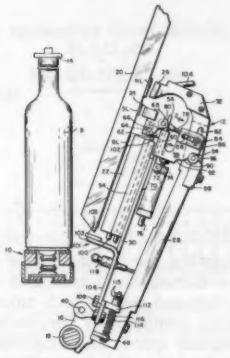


Valved membrane apparatus for recapping tires with pre-formed tread strips in a pressure chamber. Valves externally of the membranes communicate to an inner tube the increases and decreases in pressure of air within the vulcanizing chamber, so that the tube applies to the inner surface of the casing a pressure substantially the same as is applied to the outer casing surface by the membranes—no air-pressure connection is made from outside the chamber to the interior of the inner tube.

Two elastic membrances, having molded outer portions overlapping sealedly and flat circular central portions, are evacuated through a passage in a spacer block between the membranes. The block also has an inflation passage to which the external valves are connected through one membrane; this inflation passage of the spacer block leads to a pressure hose connectable to the inner tube.

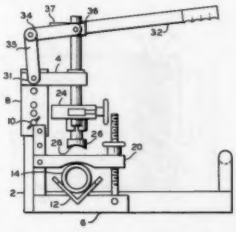
3,743,565
GRIP-FINGER FOR APPLYING LABELS
Edward A. Schnier, Hubbardston, Mass., assignor to A-T-O Inc., Cleveland, Ohio
Filed Sept. 1, 1971, Ser. No. 176,860
Int. Cl. B65c *9/08, 9/36*
U.S. Cl. 156—476 **27 Claims**

A label-applying transfer assembly of the kind which is reciprocated between a label picker and a support on which a container is supported in an upright position to take labels from the picker and to press the labels against the body, shoulder and neck of the container resting on the support, said assembly having relatively yieldable arms on which are mounted label-applying elements for movement from a common plane at the place of label transfer at substantially equal distances from each other to the different planes of the areas of the container to which the labels are to be applied at different distances from each other and specifically to provide for moving the shoulder label-applying element from a position at the transfer position substantially equally distant from the body and neck label-applying elements, which distance corresponds to the spacing of the picking elements, to a position relative to the body and neck label-applying elements at the place of label application corresponding to the spacing of the areas to which the labels are to be



applied. Movement of the shoulder label-applying element is effected by a motor mounted on the assembly and rotation of the shoulder label-applying element into the plane of the shoulder at the label-applying position is effected by relative movement of the arms. There is a rocker for effecting reciprocal movement of the label-applying element. As the rocker is rotated to label-applying position the motor is activated to effect rectilinear movement of the shoulder label-applying element and as the rocker is retracted the motor is disabled to permit the spring to retract the shoulder label-applying element.

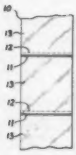
3,743,566
APPARATUS FOR JOINING A PLASTIC FITTING TO A PLASTIC PIPE
Jean H. Louthan; Arlow D. Helm, both of Pryor; Ralph A. Wynne, Bartlesville; Arthur H. McElroy, Tulsa; Gale S. Roush, Bartlesville, and Donald R. Conkling, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 24, 1970, Ser. No. 75,145
Int. Cl. B25b *27/00;* **F16l** *13/02, 47/02*
U.S. Cl. 156—499 **1 Claim**



An apparatus for joining a plastic fitting to a sidewall of a plastic pipe, said apparatus having means for securing the ap-

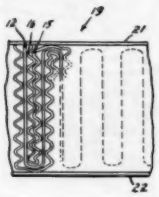
paratus to the plastic pipe and moving means attached to a fitting clamp for moving a fitting into forceful contact with the sidewall portion of the pipe for joinder thereto.

3,743,567
METHOD AND APPARATUS FOR FORMING THERMOPLASTIC BAGS
Julius Abler, Little St. Mary's Road, Libertyville, Ill. 60048
Filed June 8, 1970, Ser. No. 44,425
Int. Cl. B32b *31/20*; B31b *1/14*
U.S. Cl. 156—553 22 Claims



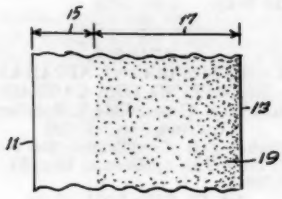
An inflated seamless thermoplastic tube is continuously extruded from a thermoplastic melt and is continuously flattened into a flattened web of such tubing, the web being simultaneously continuously longitudinally fed at a substantially constant speed. The longitudinal movement of the continuously fed web is intermittenty stopped and transversely heat sealed and perforated when it is stopped to provide the web with longitudinally spaced heat seals and perforations defining separably connected bags therein. The heat sealed and perforated web is continuously longitudinally withdrawn at a substantially constant speed corresponding to the substantially constant feeding speed. Slack is provided in the continuously fed web and the continuously withdrawn web to allow stopping of the web for heat sealing and perforating purposes. The slack in the fed web is paid out and in the withdrawn web is taken up equally when the web is not stopped and the slack in the withdrawn web is paid out and in the fed web is taken up equally when the web is stopped for equalizing and maintaining substantially constant tension in the entire fed and withdrawn web. The continuously withdrawn heat sealed and perforated web is preferably wound in a roll for ease in subsequent handling.

3,743,568
CORRUGATED PANEL STRUCTURE HAVING VERTICALLY ORIENTED COLUMNAR SHAPES
Howard E. De Wolf, East Lansing, Mich. 48823
Filed Mar. 31, 1971, Ser. No. 129,865
Int. Cl. B32b *3/12, 3/20*
U.S. Cl. 161—68 6 Claims



A panel structure fabricated from a continuous structural sheet member consisting of a single flat sheet having a corrugated sheet affixed to each side thereof. The structural member is folded in an accordion-like pleated manner so that the corrugated portions of each pleat matingly and nestably interlock with the corrugated portions of the next adjacent pleat so as to form a panel structure having a plurality of vertically oriented columnar shapes provided therethrough.

3,743,569
ARMOR OF CERMET WITH METAL THEREIN INCREASING WITH DEPTH
Mark L. Wilkins and Albert C. Holt, Livermore, Carl F. Cline, Concord, and Kenneth E. Froeschner, Livermore, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 2, 1970, Ser. No. 25,005
In. Cl. B32b *15/04*; F41h *1/02, 5/00*
U.S. Cl. 161—225 8 Claims



An armor system comprising a ceramic matrix having a gradient of fine ductile metallic particles dispersed therein in an amount of from 0.0% commencing at the front or impact surface of the armor to about 2 to 15% by volume along the interface to the back of the system.

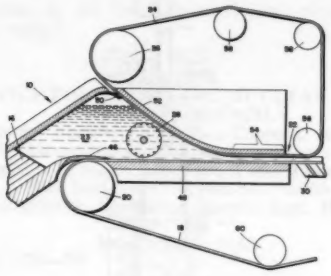
3,743,570
PROCESS FOR PRODUCING A NONWOVEN FABRIC WEB FROM A SUSPENSION OF POLYOLEFIN FIBERS AND A HYDROPHILIC COLLOIDAL POLYMERIC ADDITIVE
Christen H. C. Yang, Camas, and William A. Kindler, Jr., Washougal, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
No Drawing. Filed Mar. 3, 1971, Ser. No. 120,680
Int. Cl. D21h *5/12*
U.S. Cl. 162—157 R 20 Claims

A mass of polyolefin fibers having a dispersibility index of less than about 300. The polyolefin fibers are rendered water dispersible for use in papermaking by adding from about 0.5 to about 20% by weight of the fibers of a hydrophilic colloidal polymeric additive selected from the group consisting of anionic-cationic complexes and starch. The preferred hydrophilic colloidal polymeric additive is potato starch. The polyolefin fibers employed have a surface area greater than 1 square meter/gram.

3,743,571
PAPER WEB FORMATION USING DUAL FABRICS
George T. Ward, Greenwich, Conn., assignor to International Paper Company, New York, N.Y.
Original application Feb. 3, 1969, Ser. No. 796,131, now Patent No. 3,645,842. Divided and this application Aug. 3, 1971, Ser. No. 168,699
The portion of the term of the patent subsequent to Feb. 19, 1989, has been disclaimed
Int. Cl. D21f *11/02*
U.S. Cl. 162—203 7 Claims

To form a web of papermaking fibers in the process of papermaking, a suspension of such fibers is passed from a head box between a pair of endless fabrics, at least one of which is a foraminous forming carrier. The

fabrics are moved over paths that are substantially parallel over a substantial distance to and including the outlet orifice of the head box and are spaced a predetermined distance apart. Prior to any substantial formation of a web, the suspension leaves the orifice entrained



between the fabrics and moves at the same speed and in the same direction. Thereafter a web of the papermaking fibers is formed by removing water from the suspension through the forming carrier without exerting substantial shear forces upon the forming web.

3,743,572

SCREW FEEDER IN A CONTINUOUS CELLULOSE DIGESTER

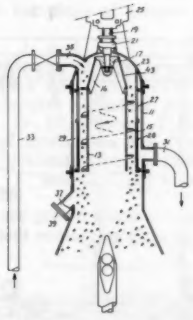
Johan C. F. C. Richter, St.-Jean-Cap-Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden

Filed June 9, 1971, Ser. No. 151,224

Claims priority, application Sweden, June 11, 1970, 8,147/70

Int. Cl. D21c *7/06*

U.S. Cl. 162—246 **9 Claims**



A screw feeder inserted in the top of a cellulose digester comprises a vertical driven center body with an exterior helical flange surrounded by a screen casing. The center body is tubular and open at both ends, so that fiber material can pass axially therethrough. Two fiber material inlets are alternately used for supplying fiber material and the feeder screw is reversible, so that it moves the fiber material either downwardly or upwardly past the screen. By means of a spider, the upper end of the tubular center body is attached to a rotary vertical shaft which is journaled in the top of the digester. The legs of the spider leave the upper end of the center body open.

3,743,573

OPEN STOCK FLOWBOX SYSTEM

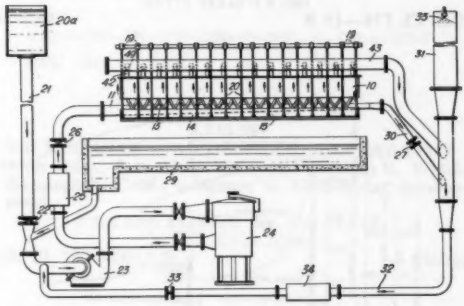
Brian William Attwood, Hanham, near Bristol, and Harold George Curry, Hambrook, near Bristol, England, assignors to St. Anne's Board Mill Company Limited

Continuation of abandoned application Ser. No. 828,949, May 29, 1969. This application Oct. 4, 1971, Ser. No. 186,516

Claims priority, application Great Britain, July 4, 1968, 31,975/68

Int. Cl. D21f *1/06*

U.S. Cl. 162—336 **4 Claims**



This invention relates to an open stock flowbox system for a paper or board making machine in which the system employs an enclosed tank with an open-top stand pipe in a recirculation arrangement for recycling excess stock from the full enclosed tank, there being no stock/air interface prior to the slice such that crust formation and web breakage is avoided.

3,743,574

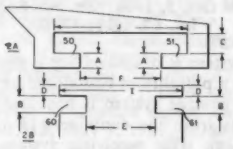
MOUNTING STRUCTURE FOR PAPER MACHINE DRAINAGE FOILS

Rudolph Walser, Deisswil, Switzerland, and William R. Givin, Greeneville, Tenn., assignors to Huyck Corporation, Rensselaer, N.Y.

Filed July 26, 1971, Ser. No. 165,924

Int. Cl. D21f *1/48*

U.S. Cl. 162—352 **10 Claims**



This invention relates to means for affixing hydrofoil blades to papermaking machines. In one embodiment of

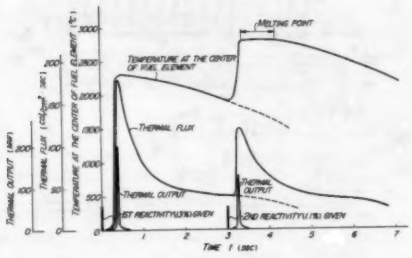
this invention, there is provided an elongated mouting bar with channels in the front-facing and in the rear-facing surfaces of the bar to which a hydrofoil blade may be affixed, by sliding into place; the blade having a base portion in which there is an elongated slot forming projections to fit into the bar channels without substantial vertical play, and a routed-out center portion of such dimensions that the critical regions of close contact between the bar and the blade are substantially limited to the upper and lower surfaces of the slots and the corresponding upper and lower surfaces of the projections.

3,743,575

METHOD OF HEATING A SAMPLE MATERIAL TO A HIGH TEMPERATURE BY USING A RELATIVELY LOW POWER NUCLEAR REACTOR

Kiyokazu Inagaki and Hidemasa Kato, Sagamihara, and Kiyoshi Inoue, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 28, 1970, Ser. No. 58,843
Claims priority, application Japan, Aug. 1, 1969, 44/60,403
Int. Cl. G21c *17/06*
U.S. Cl. 176—19 R **2 Claims**



A method of heating a sample material to a high temperature by the use of a relatively low power nuclear reactor, which comprises the steps of inserting a test fuel rod including the sample material into the reactor core and repeatedly operating the reactor with relatively short repetition cycles to obtain multiple pulse outputs, said repetition cycles being set to satisfy the conditions that the thermal flux through the covering tube of the test fuel rod lowers sufficiently during each cycle, but that the temperature of the sample material hardly lowers. According to this method, a neutron bombardment test of the sample material can be effected in the state that the sample material is heated to a high temperature without fusing nor harming the covering tube or the other components of the reactor core.

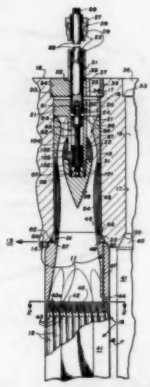
3,743,576

FUEL ELEMENT AND VENTING SYSTEM USING SAME

Peter Fortescue, La Jolla, Calif., assignor to Gulf Energy & Environmental Systems, Inc., San Diego, Calif.

Filed Oct. 3, 1969, Ser. No. 863,497
Int. Cl. G21c *17/06*
U.S. Cl. 176—37 **7 Claims**

A venting system is described for a gas cooled nuclear reactor having a plurality of containers for fissionable material. A vent passage system is provided for conducting fission products from the containers to a fission product receiving system. The receiving system and the vent passage system are at a lower pressure than the ambient pressure of the coolant gas. At least one bleed passage is provided adjacent the containers communicating from the cooling system of the reactor to the vent passage system for bleeding coolant gas into the vent passage system, thereby speeding the transportation of fission products to the receiving system, and so reducing the deposition of solids decaying therefrom in the connecting ducting.



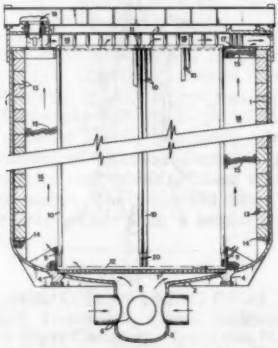
Also described is a fuel element for use in such a reactor, such fuel elements having a self-containing variable position plug and orifice arrangement for varying the flow of coolant through the fuel element.

3,743,577

SINGLE FLUID MOLTEN SALT NUCLEAR BREEDER REACTOR

Edward S. Bettis, Knoxville, Herbert G. MacPherson, Oak Ridge, Alfred M. Perry, Knoxville, and Orville L. Smith, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 3, 1968, Ser. No. 733,843
Int. Cl. G21c *3/54*
U.S. Cl. 176—49 **16 Claims**



A molten-salt-fueled graphite-moderated nuclear breeder reactor characterized by a single salt mixture containing both fissile and fertile material which serves as both fuel and blanket fluid. The reactor is divided into core and blanket regions which are distinguished by the degree of neutron moderation provided therein. The

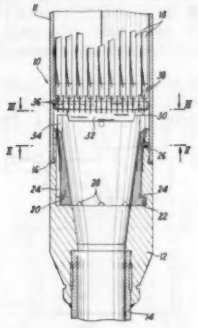
degree of neutron moderation in the core and blanket regions may be varied by varying the volume fraction of salt mixture present in each region, by varying the density of the graphite moderator in each region, or by a combination of the two methods. The composition of the salt mixture and the neutron moderation provided in each region are selected so that neutron absorption by the fissile material predominates in the core and absorption of neutrons by the fertile material predominates in the blanket region.

3,743,578

DEVICE FOR ATTACHING NUCLEAR FUEL PINS IN AN ASSEMBLY

Jean-Claude Agrainer, Cornillon-Confoux, and André Cayol, Aix-en-Provence, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sept. 14, 1970, Ser. No. 72,000
Claims priority, application France, Sept. 19, 1969, 6932031
Int. Cl. G21c *3/32*
U.S. Cl. 176—78 **9 Claims**



A fuel assembly comprises a bundle of fuel pins grouped contiguously in a regular pattern and a shroud. A device for retaining the fuel pins comprises two parallel spindles attached to the shroud and disposed transversely of the direction of circulation of the coolant and parallel rails disposed perpendicularly to the spindles and sliding thereon and in the plugs of a layer of pins.

3,743,579

METHOD OF CULTIVATING LEISHMANIA

Georg Solomovich Zilberblat, Pushechnaya ul 7/5, kv. 69, Moscow, U.S.S.R.

Continuation of application Ser. No. 616,934, Feb. 17, 1967. This application Oct. 26, 1970, Ser. No. 84,117
Int. Cl. C12b *1/14*
U.S. Cl. 195—80 **1 Claim**

Leishmania are grown under submerged aerated conditions in a nutrient containing glucose and vitamin B_1.

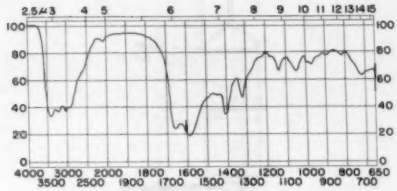
3,743,580

ANTIBIOTIC, NEGAMYCIN, AND PROCESSES FOR THE PREPARATION THEREOF

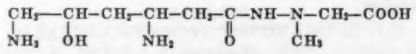
Hamao Umezawa, Tokyo, Shinichi Kondo, Yokohama, and Kenji Maeda, Tomio Takeuchi, and Masa Hamada, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Kami-Osaki, Shinagawa-ku, Tokyo, Japan

Original application Apr. 28, 1970, Ser. No. 32,641, now Patent No. 3,679,742. Divided and this application May 15, 1972, Ser. No. 253,618
Int. Cl. C12b *1/00*
U.S. Cl. 195—80 R **7 Claims**

Process for the production of an antibiotic substance called negamycin which comprises cultivating a strain of *Streptomyces purpeofuscus* A.T.C.C. 21470 in an aqueous carbohydrate solution containing a nitrogenous nutrient under aerobic conditions until substantial antibacterial activity is imparted to said solution and then re-



covering said negamycin from said solution and negamycin which is effective for inhibiting Psuedomonas, Salmonella, Shigella, Klebsiella, *E. coli*, Staphylococci and which has the following structure:

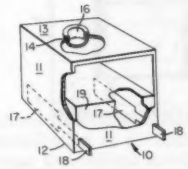


3,743,581

MICROBIOLOGICAL DETECTION APPARATUS

Paxton Cady, Los Altos Hills, and William J. Welch, Kensington, Calif., assignors to Bactomatic, Incorporated

Filed Oct. 21, 1970, Ser. No. 82,732
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **8 Claims**



Microbiological growth is determined with great rapidity by measuring electrical conductivity changes in sealed cells having selected varieties of nutrient media inoculated with a sample containing suspected microbial contamination. The measurement and selection of nutrient media allows determination of the presence, type, antibotic sensitivity and a quantitative count of bacteria and other micro-organisms present in any selected sample. Several types of growth and conductivity cells are provided for measuring the change in electrical conductivity.

3,743,582

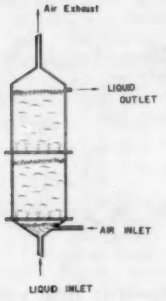
METHOD OF FERMENTATION UTILIZING A MULTI-STAGE FERMENTING DEVICE

Atsuo Kitai, Kamakura, Hiroshi Tone, Fujisawa, and Asaichiro Ozaki, Tokyo, Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 672,870, Oct. 4, 1967. This application May 27, 1970, Ser. No. 40,899
Claims priority, application Japan, Oct. 6, 1966, 41/65,412; May 9, 1967, 42/28,909
Int. Cl. C12b *1/00, 1/10, 1/14*
U.S. Cl. 195—141 **10 Claims**

A method of fermentation utilizing a multi-stage fermenting device, which comprises the step of culturing micro-organisms aerobically or anaerobically, in a device

comprising a vertical stack of compartments separated by horizontal plates provided with one or more holes by introducing gas and culture medium from the bottom and



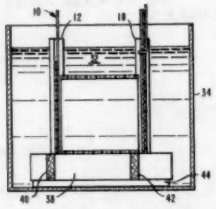
maintaining a layer of gas beneath each plate which prevents backflow of medium from any compartment to one therebelow.

3,743,583

PRINTED CIRCUIT BOARD FABRICATION

Richard N. Castonguay, Los Angeles, Calif., assignor to The Mica Corporation, Culver City, Calif.

Filed Jan. 15, 1971, Ser. No. 106,832
Int. Cl. C23g *5/32, 5/48, 5/68*
U.S.Cl. 204—27 **4 Claims**



A novel method of producing a printed circuit board material having a substrate carrying superposed resistive material and conductive metal layers which comprises depositing the resistive layer on a preformed conductive metal film, the improvement wherein the resistive layer is deposited on said preformed conductive metal layer in a plating bath having an anode and wherein the preformed conductive metal film is the cathode, and wherein the resistive material is deposited slowly from a dilute plating solution in a quiescent state by the use of a tunnel positioned within the bath between the anode and cathode to regulate turbulence within the bath between said anode and cathode, and prevent diffusion into the enclosed area of the bath.

The present invention further comprises the novel apparatus for carrying out the foregoing process which comprises a plating bath having a resistive metal anode and a preformed conductive metal film cathode, a plating solution within said bath comprising a salt of said resistive material, positioned between said anode and cathode, a tunnel comprising a box-like structure open at the ends in proximity to said anode and cathode and otherwise closed by generally parallel, horizontal and vertical sheet members which abut at the edge, said tunnel being adapted to control the turbulence of the plating solution within said bath, and to prevent diffusion into the enclosed area of said bath.

3,743,584

ACID BRIGHT COPPER PLATING BATH

Hans-Gunther Todt; Wolfgang Clauss, and Wolfgang Dahms, all of Berlin, Germany, assignors to Schering AG, Berlin, Germany

Filed June 2, 1971, Ser. No. 149,335
Claims priority, application Germany, June 6, 1970, P 20 28 803.3
Int. Cl. C23b *5/18*
U.S. Cl. 204—52 R **5 Claims**

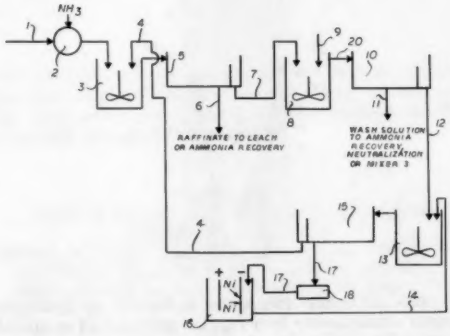
Polymeric phenazonium compounds, their method of preparation and their use in acid electrolytes for the deposition of bright, leveling, copper coatings on surfaces.

3,743,585

METAL RECOVERY PROCESS

Edward Harris Lowenhaupt III and Edward Edmunds, Jr., El Paso, Tex., assignors to S.E.C. Corporation, El Paso, Tex.

Continuation-in-part of application Ser. No. 86,526, Nov. 3, 1970. This application Oct. 12, 1971, Ser. No. 188,472
Int. Cl. C22d *1/14;* **C22b** *43/60*
U.S. Cl. 204—112 **5 Claims**



A process for electrolytic deposition of nickel wherein nickel is extracted from a nickel-containing liquor by contacting said liquor with an ion exchange medium to bond nickel to said material; nickel is stripped from said ion exchange material by contact with an aqueous mineral acid electrolyte solution having a pH of about 0.5 or higher; the stripped ion exchange medium is again contacted with nickel-containing liquor for extraction of additional nickel; the nickel pregnant aqueous mineral acid electrolyte solution from said stripping operation is subjected to electrolysis to deposit metallic nickel and the electrolyte solution resulting from said electrolysis is recycled to the stripping operation at a rate sufficient to simultaneously remove nickel from the ion exchange medium and to reduce the hydrogen ion concentration of the aqueous electrolyte solution.

3,743,586

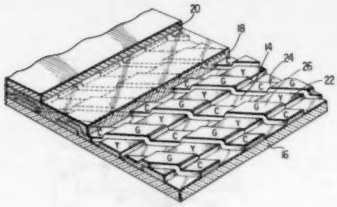
METHOD OF MAKING A COLOR ENCODING FILTER ASSEMBLY

John Louis Vossen, Bedminster, N.J., assignor to RCA Corporation

Continuation-in-part of abandoned application Ser. No. 867,514, Oct. 20, 1969. This application Apr. 5, 1971, Ser. No. 130,975
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**

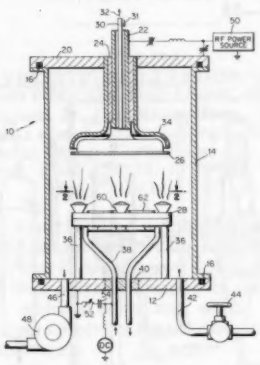
A method of making a color encoding filter assembly includes the steps of depositing a first optical filter layer on a substrate and removing selected portions of the filter

layer by radio frequency sputter etching to produce a first pattern in the filter layer. A second filter layer is then deposited directly on the substrate and the first filter



layer. Selected portions of the second filter layer are removed to produce a second pattern superimposed on the first pattern.

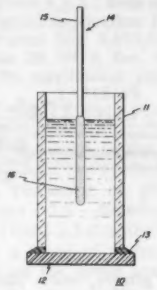
3,743,587
METHOD FOR REACTIVE SPUTTER DEPOSITION OF PHOSPHOSILICATE GLASS
Thomas Nolan Kennedy, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 1, 1972, Ser. No. 230,869
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **5 Claims**



A method for reactive sputter depositing phosphosilicate glass on a substrate utilizing a sputtering chamber having a fused quartz target disposed on a target electrode, and a substrate holder spaced from the target holder electrode. Substrates to be covered are introduced into the sputtering chamber and located on the substrate holder electrode, a R.F. potential is applied across the target electrode and the substrate holder electrode to establish a glow discharge in the region between the electrodes, and vaporized P_2O_5 is introduced into the region of the glow discharge. The vaporized P_2O_5 and target material result in the deposition of a phosphosilicate glass layer.

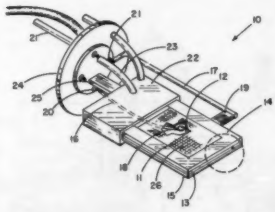
3,743,588
ION-SPECIFIC MEMBRANE
John F. Brown, Jr., George M. J. Slusarczuk, and Oliver H. Le Blanc, Jr., Schenectady, N.Y., assignors to General Electric Company
Filed Oct. 18, 1971, Ser. No. 190,344
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **4 Claims**

An ion-specific membrane includes a hydrophobic elastomeric polymer with a dielectric constant of 4 to 13, and an ion-specific carrier. The hydrophobic elastomeric polymer is preferably an organopolysiloxane polycarbonate



block copolymer. The ion-specific carriers include H^+ and K^+ ion carriers.

3,743,589
ELECTROCHEMICAL VAPOR DETECTOR
Merle E. Nicholas, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 23, 1971, Ser. No. 211,224
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **9 Claims**

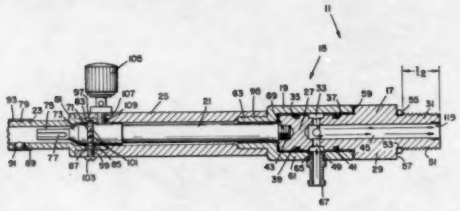


A potentiometric electrochemical detector for the quantitative determination of air-borne vapors which exhibits long-term base line voltage stability is disclosed. The system is especially useful in the determination of such compounds as ammonia and amines which have ionizable groups capable of readily forming reversible complexes with a metal sensing electrode at the vapor-electrode-electrolyte interface. A porous metal sensing electrode is disposed with an outer surface exposed to a sample stream and an inner surface exposed to a flowing electrolyte of partially de-ionized water. The flowing electrolyte provides a conductive path between the sensing electrode and a reference electrode, prevents contamination of the reference half-cell by dissolved electroactive species and, in conjunction with the air contacting the electrode, functions to reproduce a stable state of surface composition on the sensing electrode after exposure to a sample.

3,743,590
ELECTRO PLATING DEVICE
Robert H. Roll, 18215 Los Alamos St., Northridge, Calif. 91324
Filed Apr. 26, 1971, Ser. No. 137,289
Int. Cl. C23b *5/68, 5/76*
U.S. Cl. 204—212 **6 Claims**

An electro plating device including an anode mounted on an anode operating mechanism. The anode operating mechanism continuously rotates and passes plating solution through the anode. The anode is cylindrical, has an interior cavity, and a plurality of small radial passages extending from the interior cavity to the outside surface

of the anode. The anode operating mechanism includes a rotatably mounted anode arbor that is driven by a drive extension and an external power source. The anode arbor



includes a solution groove, seals, and a longitudinally extending passage that supplies fluid to the anode. The electrical current path is through the drive extension, the anode arbor, and then to the rotating anode.

3,743,591

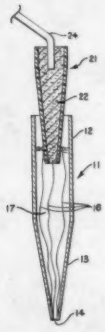
ION-SELECTIVE MICROELECTRODE

Richard A. Steinhardt, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 5, 1971, Ser. No. 130,928

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 L **4 Claims**



An ion-selective microelectrode adapted for insertion into living cells. A very fine glass capillary tube is drawn to a hollow point with minute glass fibers in the tube and an ion exchange liquid in the tube extends from the open point a substantial distance into the tube. The electrode is calibrated by use of a reference liquid carried in a solid porous material placed in contact with the ion exchange liquid and removed after calibration to provide a device with long shelf life.

3,743,592

APPARATUS FOR SEALING AN ANODE CONNECTION AND METHOD THEREFOR

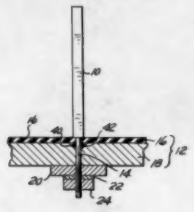
Robert P. Metcalfe, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sept. 1, 1971, Ser. No. 176,942

Int. Cl. B01k *3/10*

U.S. Cl. 204—266 **4 Claims**

In a diaphragm-type electrolytic cell for the production of chlorine and caustic alkali from alkali metal chloride solutions and having a resilient bottom sheeting covering the bottom, an improved seal for the purpose of keeping of corrosive electrolyte out of an anode connection is obtained by the use of an O-ring seal in combination with the resilient bottom sheeting.



3,743,593

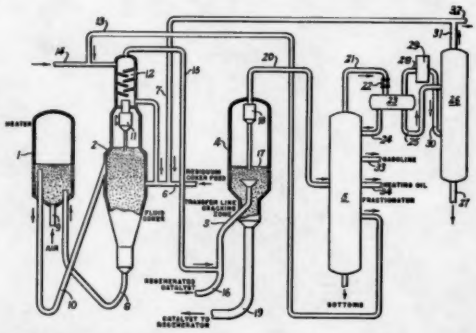
CATALYTIC CRACKING PROCESS WITH MAXIMUM FEED VAPORIZATION

Arthur L. Saxton, Warren Township, N.J., assignor to Esso Research and Engineering Company

Filed Nov. 30, 1970, Ser. No. 93,755

Int. Cl. C10g *37/06*

U.S. Cl. 208—55 **14 Claims**



Petroleum hydrocarbon feedstocks in the gas oil boiling range are cracked in a fluidized catalytic reactor following admixing said feedstock with coker effluent to vaporize the feedstock prior to its introduction into the reactor.

3,743,594

HYDRODESULFURIZATION OF NAPHTHA WITH A GROUP VIII METAL COMPONENT COMBINED WITH SYNTHETIC LAYERED CRYSTALLINE ALUMINOSILICATE

Barnard F. Mulaskey, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

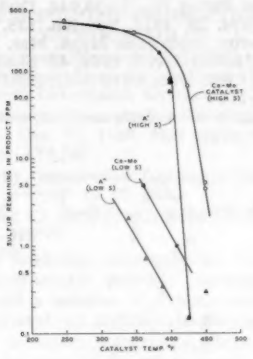
Filed May 14, 1971, Ser. No. 143,504

Int. Cl. C10g *23/02, 23/04*

U.S. Cl. 208—216 **12 Claims**

A process for desulfurization of naphtha which comprises contacting the naphtha in the presence of hydrogen gas with a catalyst comprising a Group VIII metal

component and a layered crystalline aluminosilicate. Preferably, the catalyst Group VIII metal is palladium and the desulfurization is preferably carried out at a relatively low temperature between 300° and 550° F.



The naphtha desulfurization catalyst used has been found to be superior to desulfurization catalysts, containing three dimensional crystalline aluminosilicate molecular sieves.

3,743,595
DUAL-LAYER HYPERFILTRATION MEMBRANE AND PROCESS FOR USING SAME
James S. Johnson, Jr., Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,763
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **4 Claims**

Dual-layer hyperfiltration membranes made by coating a hydrous oxide membrane with an organic polyacid such as polyacrylic acid followed by an acid wash behave more reproducibly than polyacid membranes formed in the absence of the hydrous oxide and, unlike hydrous oxide membranes, operate best in the pH range most commonly found in saline waters.

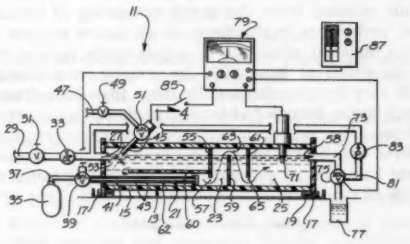
3,743,596
OSMOSIS PROCESS
Lino Credali, Bologna, and Paolo Parrini, Novara, Italy, assignors to Consiglio Nazionale Delle Richerche and Montecatini Edison S.p.A., both of Milan, Italy
No Drawing. Original application July 6, 1970, Ser. No. 52,733, now Patent No. 3,687,842. Divided and this application June 26, 1972, Ser. No. 266,151
Claims priority, application Italy, July 8, 1969, 19,317/69
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **2 Claims**

Osmosis process utilizing as the semi-permeable membrane, a blend of at least two synthetic polyamides selected from the group consisting of poly(trans - 2,5 - dimethyl-piperazinfumaramide), poly(2-methyl-piperazinfumaramide) and poly(trans - 2,5-dimethyl-piperazinmesaconamide) or a blend of at least one synthetic polyamide selected from the group consisting of polytrans-2(,5-dimethyl-piperazinfumaramide), poly(2 - methyl-piperazinfumaramide) and poly(trans-2,5-dimethyl-piperazinmesaconamide), and a member selected from the group consisting of polypyrrolidone, polycaprolactam and polyhexamethylenadipamide.

3,743,597
OSMOSIS PROCESS
Lino Credali, Bologna, and Paolo Parrini, Novara, Italy, assignors to Consiglio Nazionale Delle Recherche and Montecatini Edison S.p.A., both of Milan, Italy
No Drawing. Original application July 6, 1970, Ser. No. 52,748, now Patent No. 3,693,031. Divided and this application June 26, 1972, Ser. No. 266,461
Claims priority, application Italy, July 8, 1969, 19,318/69
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **2 Claims**

Osmosis process utilizing as the semipermeable membrane, a blend of at least two synthetic polyamides selected from the group consisting of poly(piperazinisophthalamide), poly-(trans - 2,5 - dimethyl piperazinterephthalamide (and poly-(trans-2,5-dimethyl piperazin-trans-transmuconamide) or a blend of at least one synthetic polyamide selected from the group consisting of poly(piperazinisophthalamide), poly-(trans-2,5-dimethyl piperazinterephthalamide), and poly-(trans-2,5-dimethyl piperazintrans-trans-muconamide), and a member selected from the group consisting of nylon 6, nylon 4, nylon 6.6 and nylon 6.10.

3,743,598
APPARATUS AND PROCESS FOR MIXING CHEMICALS
J. Paul Field, 2508 Holly Lane, Newport Beach, Calif. 92660
Filed Sept. 2, 1971, Ser. No. 177,367
Int. Cl. C02b *1/34*
U.S. Cl. 210—49 **15 Claims**

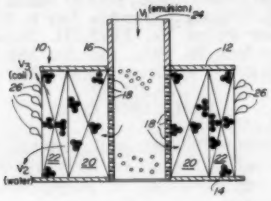


An apparatus for mixing chemicals comprising a tank having first and second inlets connectible to sources of first and second chemicals, respectively, and an outlet. The chemicals are channeled within the tank so that they come into intimate contact, and the path from the inlets to the outlet is elongated through the use of baffles. Mixing of the two chemicals is accomplished without motor driven means by using the two chemicals to create turbulence within the tank. A sensor adjacent the outlet measures a characteristic of the mixture of chemicals and controls the supply of at least one of the chemicals in accordance with the value of the measured characteristic to thereby control such characteristic of the mixture.

3,743,599
COALESCING FILTERS FOR OIL-WATER SEPARATORS
Guilford B. Peters, Mendham, N.J., assignor to Brunswick Corporation, Skokie, Ill.
Filed Mar. 17, 1972, Ser. No. 235,621
Int. Cl. B01d *27/04*
U.S. Cl. 210—490 **3 Claims**

A coalescing filter for an oil-water separator is described. The illustrated embodiment of the filter comprises a winding of multifilament twisted nylon yarn

completely enclosed by a winding of multifilament twisted polypropylene yarn. Both windings are impregnated with



an oleophilic resin which, together with oil, forms a membrane that coalesces even emulsified oils.

3,743,600

SOLID BLENDS OF PEROXY COMPOUNDS AND PHOSPHATE CONTAINING DETERGENT BASES

John Frederick George Harris, Luton, England, assignor to Laporte Chemicals Limited

Continuation-in-part of abandoned application Ser. No. 613,011, Jan. 31, 1967. This application July 20, 1970, Ser. No. 56,636

Claims priority, application Great Britain, Feb. 4, 1966, 5,039/66

Int. Cl. C11d *7/18, 7/56*

U.S. Cl. 252—95 10 Claims

A particulate detergent composition comprising phosphate containing detergent base and a solid blend of peroxy compounds comprising inorganic peroxidic compounds selected from the group consisting of percarbonates, perborates in the form of an active oxygen containing material consisting of substantially regular particles of which at least 80% by weight have diameters which vary by not substantially more than 25% from the average mean diameter of the inorganic peroxy compound particles. The perborate and percarbonate components manifest the bulk density of 1:3 times that of the detergent base and an average mean particle diameter within 25% of the norm.

3,743,601

PROCESS FOR MAKING SILICATE FOAMS FROM ALKALI METAL SILICATES

Ramesh P. Rao, Sarnia, Ontario, Canada, assignor to Fiberglas Canada Ltd., Toronto, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 875,568, Nov. 10, 1969. This application Nov. 4, 1970, Ser. No. 86,931

Int. Cl. C04b *21/00;* F16l *59/00*

U.S. Cl. 252—62 17 Claims

A process for economically forming micro cellular, inorganic silicate foams for use in building construction and having good structural, thermal and sound insulation properties. The process for forming such foams comprises the steps of hydrating finely divided particulate silicates with water and expanding the mass by input of thermal energy. The thermal energy can be provided by a conventional heat source, by a microwave energy source or by dissipation of mechanical energy in the material. The silicate may be sodium silicate and the sodium silicate may have a ratio of SiO_2 to Na_2O of 1:1 to 5:1 (or more). The hydrated material may further comprise other alkali metal silicates. It may further contain complexing agents to insolubilize the resulting foam, and other additives to impart desirable physical or chemical characteristics. This method can yield water resistant or insoluble silicate foams of microcellular closed cell structure, 2 to 8 p.c.f. density, high strength-to-density ratio, and low thermal conductivity.

3,743,602

OPTICAL BRIGHTENING AGENTS IN DETERGENT COMPOSITIONS

Masaaki Ohkawa, Takatsuki, Masatoshi Matsuo, Ibaragi, Tadao Sakaguchi, Osaka, Syozi Sato, Hirakata, and Yoshikazu Momoi, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

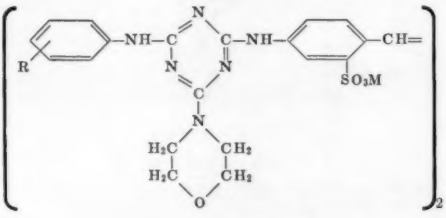
No Drawing. Original application Jan. 27, 1969, Ser. No. 794,388, now Patent No. 3,630,944. Divided and this application Apr. 20, 1971, Ser. No. 135,741

Claims priority, application Japan, Mar. 14, 1968, 43/16,916; Apr. 9, 1968, 43/23,610

Int. Cl. C09k *1/00;* C11d *3/42;* D06l *3/12*

U.S. Cl. 252—110 2 Claims

β-Form crystals of a compound represented by the formula



wherein R is hydrogen atom or methyl group; and M is sodium or potassium having a particle size of about 1 x 2μ which is prepared by pulverizing said crystals in the presence of alkaline phosphates and/or alkaline silicates or in the presence of alcohol, ester, ketone, hydrocarbon or a mixture thereof are employed as an optical brightening agent in a washing agent also containing a detergent and a builder.

3,743,603

INHIBITING SCALE WITH NITROGEN-HETEROCYCLIC PHOSPHONIC ACIDS

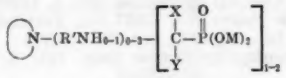
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Oct. 17, 1968, Ser. No. 768,509. Divided and this application Aug. 26, 1971, Ser. No. 175,318

Int. Cl. C02b *5/06*

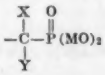
U.S. Cl. 252—180 14 Claims

Process of inhibiting scale in an aqueous system by adding to said aqueous system scale inhibiting amounts of nitrogen heterocyclic phosphonic acids and derivatives thereof characterized by aminomethyl (or substituted methyl) phosphonic acids or derivatives thereof bonded directly or indirectly, i.e., through a N-side chain to the nitrogen atom in the heterocyclic ring, for example those containing in the molecule at least one of the following units:



where

represents a heterocyclic ring having a nitrogen atom on the ring; —$R'NH_{0-1}$— represents an amino-terminated side chain attached directly to the ring nitrogen (which side chain may or may not be present); and



represents a methyl (or substituted methyl) phosphonic acid group where M is hydrogen, an alcohol or a salt

moiety, and X and Y are hydrogen or a substituted group such as alkyl, aryl, etc., of which one or two units may be present depending on the available nitrogen bonded hydrogens.

3,743,604

PROCESS FOR THE PRODUCTION OF MICROCAPSULES

Hildegard Schnoring, Wuppertal-Elberfeld, and Nikolaus Schon, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 886,028, Dec. 17, 1969. This application Aug. 23, 1971, Ser. No. 174,147

Claims priority, application Germany, Jan. 9, 1969, P 19 00 865.2

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **1 Claim**

Method for producing microcapsules wherein a solution of a water-soluble polymer containing acid and base groups and a solution of a water-soluble polymer containing carboxyl- or carboxylate groups are purified by means of an ion-exchanger and wherein a material which forms the core of the microcapsules is dispersed in one of said solutions prior to mixing the solution. Upon mixing the solutions, spontaneous coacervation occurs without the necessity of lowering the temperature. The water-soluble polymers used are gelatin and gum arabic.

3,743,605

DISPERSING AID-CONTAINING BLOWING AGENTS FOR POLYMERS AND METHOD OF USING THE SAME

Robert C. La Clair, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed June 2, 1971, Ser. No. 149,392

Int. Cl. C06d; C09k *3/00*

U.S. Cl. 252—350 **3 Claims**

A mixture is formed of a solid, particulate blowing agent and a solid, particulate inert inorganic compound of a metal having a specific gravity no greater than 4.5, the inert compound acting as a dispersing aid and the proportion thereof in the mixture being 1 to 5% by weight, based on the weight of the blowing agent. When this composition is mixed directly with a liquid or paste composition comprising a polymer, the blowing agent is completely dispersed in the liquid or paste. When the liquid or paste is then formed into a film and heated whereby the blowing agent decomposes, the film is free of defects characteristic of incomplete dispersion of blowing agent.

3,743,606

SYNTHESIS GAS GENERATION

Charles P. Marion, Mamaroneck, N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Development Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 787,885, Dec. 30, 1968. This application Jan. 23, 1970, Ser. No. 5,444

Int. Cl. C07c *1/02*

U.S. Cl. 252—373 **11 Claims**

Manufacture of synthesis gas by partial oxidation of a normally liquid hydrocarbon by feeding into the reaction zone a relatively low velocity stream of liquid hydrocarbon and a stream of oxygen-containing gas thru separate central nozzles of a triple orifice burner in such a manner as to effect atomization of the oil downstream of the burner, these streams being enclosed in a third, outer annular stream of moderator gas, such as steam, so that none of the three streams comes into contact with any other gas with which it is combustible until it reaches a distance downstream from the burner tips beyond that close enough to cause appreciable deterioration.

3,743,607

PALLADIUM-GOLD CATALYST

Kurt Sennewald, Hermulheim, near Cologne, Wilhelm Vogt, Efferen, near Cologne, and Hermann Glaser, Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Application Apr. 14, 1969, Ser. No. 816,121, which is a continuation-in-part of abandoned application Ser. No. 553,721, May 31, 1966. Divided and this application May 21, 1971, Ser. No. 145,979

Claims priority, application Germany, June 25, 1965, K 56,472; July 20, 1965, K 56,658; Apr. 1, 1966, K 58,898

Int. Cl. C07c *67/04*

U.S. Cl. 252—430 **9 Claims**

An improved catalyst for the catalytic, vapor phase production of vinyl acetate from ethylene, acetic acid and molecular oxygen is shown. A catalyst for the synthesis reaction comprising metallic palladium and an alkali metal acetate or formate supported on a carrier is activated by including metallic gold therein. A preferred catalyst composition which shows substantially improved operating characteristics includes metallic palladium, an alkali metal acetate and metallic gold. Another preferred catalyst composition includes a low melting mixture of at least two alkali metal acetates.

3,743,608

ANTISTATIC COMPOSITION

Teiji Habu, Kyusaku Yoshida, Yotaro Hirao, and Kazuo Takahashi, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,355

Claims priority, application Japan, Aug. 5, 1970, 45/67,990

Int. Cl. G03c *1/82;* **H01b** *1/06*

U.S. Cl. 252—500 **5 Claims**

An antistatic composition which comprises a protective colloid solution and, dispersed therein, a solution of an antistatic agent in a substantially water-insoluble organic solvent of the phthalate, pyrrolidone or phosphate type and having a specific gravity lower than that of the protective colloid.

3,743,609

PROCESS FOR PRODUCING PHOTOCONDUCTIVE MATERIALS

Masao Hirata and Noriyoshi Tarumi, Tokyo, and Masayuki Sato, Ohtsuki, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,726

Claims priority, application Japan, Dec. 26, 1970, 45/119,052

Int. Cl. H01c *7/08;* **G03g** *5/08*

U.S. Cl. 252—501 **1 Claim**

A process for producing a photoconductive powder according to the valence control method, in which a photoconductive inorganic powder is fired in the presence of an activator, a coactivator and a flux, characterized in that the firing is effected in the presence of a dispersant having such property that it contacts with the photoconductive powder, without melting at the firing temperature, and does not fuse nor agglomerate the photoconductive powder. The process is particularly applicable to photoconductive powders containing cadmium sulfide, cadmium selenide or cadmium sulfoselenide.

3,743,610
SPRAY DRIED DETERGENT COMPOSITION OF CONTROLLED ALKALINITY
Helmut H. Weldes, Havertown, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.
No Drawing. Filed July 20, 1971, Ser. No. 164,425
Int. Cl. C11d *11/02, 3/26, 3/08*
U.S. Cl. 252—527 **1 Claim**

Fragments of alkali metal silicate glass are included in spray dried detergent formulations with acidic organic sequestering agents to control the pH of the system during preparation and use.

3,743,611
FOAMABLE THERMOPLASTIC BEADS AND A PROCESS FOR THE PREPARATION THEREOF
Tadashi Muroi, Yoshitaka Oguri, and Hidenori Hamaoka, Hitachi, Japan, assignors to Hitachi, Ltd., and Hitachi Chemical Company, Ltd., both of Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 643,834, June 6, 1967. This application July 9, 1971, Ser. No. 161,935
Claims priority, application Japan, June 8, 1966, 41/36,511, 41/36,512
Int. Cl. C08j *1/30*
U.S. Cl. 260—2.5 B **30 Claims**

Thermofoamable thermoplastic beads consisting of a thermoplastic resin containing at least 5% by weight of an aliphatic olefin polymer, said beads being impregnated with a foaming agent which does not dissolve the resin at foaming temperatures and is gaseous or liquid at room temperature and normal pressure; for example, propane, n-pentane and the like.

3,743,612
PROCESS FOR CURING CARBOXYLATED LATEX WITH A COREACTIVE RESIN USING TETRAAMMINEZINC (II) SALTS
Theodore Merriam Vial, Princeton Township, Mercer County, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 155,308, June 21, 1971. This application June 14, 1972, Ser. No. 262,806
Int. Cl. C08j *1/16, 1/18*
U.S. Cl. 260—2.5 L **9 Claims**

A carboxylated latex pre-vulcanizate composition is provided which comprises:

(a) a carboxylated latex which is a copolymer of at least two polymerizable, ethylenically unsaturated monomers selected from the group consisting of butadiene, styrene, acrylonitrile and monomers copolymerizable therewith wherein up to about 10 percent by weight of said monomers consists of monomers which have a pendant reactive group, selected from the group consisting of monoethylenically unsaturated mono- and dicarboxylic acids, acrylamide, an N-hydroxyalkylacrylamide or a primary hydroxyalkyl acrylate,

(b) from about 1 to 100 percent, based on the weight of the copolymer in the latex, of at least one coreactive resin being selected from the group consisting of melamine-formaldehyde condensates, urea, urea-formaldehyde condensates, methylated melamine-formaldehyde condensates, methylated urea-formaldehydrate condensates, butylated melamine-formaldehyde condensates, butylated urea-formaldehyde condensates and phenol formaldehyde condensates, and

(c) from about 0.5 to 5 percent based, on the weight of the solids content of the latex and the resin together, of a tetraamminezinc (II salt).

In addition, solid foams prepared from the above composition, as well as composite articles comprising such foams are also provided along with a method of preparing such solid foams.

3,743,613
GALACTOMANNAN GUM BASED COMPOSITION FOR SEALING PERMEABLE FORMATIONS
Albert W. Coulter, Jr., Daniel L. Gibson, and Kenneth H. Nimerick, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 67,675, Aug. 3, 1970, which is a continuation-in-part of application Ser. No. 623,232, Mar. 15, 1967. This application Feb. 5, 1971, Ser. No. 113,089
Int. Cl. C08d *9/06*
U.S. Cl. 260—17.4 ST **15 Claims**

A composition is provided which may be employed for the selective sealing of permeable formations. The composition contains at least one particulate galactomannan gum which has been treated to render the gum hydrophobic in aqueous solutions having a pH of at least about 7.5; a pH control agent, and a water-soluble organic polymeric suspending agent.

3,743,614
STABILIZED POLYOXYMETHYLENE MOLDING COMPOSITIONS CONTAINING A MIXTURE OF AN ALKALINE EARTH METAL SALT AND AN ESTER OF (ALKYLHYDROXYPHENYL)-CARBOXYLIC ACIDS WITH A POLYOL
Ernst Wolters, Frankfurt am Main, and Gunther Roos, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,693
Claims priority, application Germany, Sept. 2, 1970, P 20 43 498.4
Int. Cl. C08g *51/56*
U.S. Cl. 260—18 R **6 Claims**

The stabilization of polyoxymethylenes against oxidation and thermal decomposition is carried out by adding a combination of alkaline earth metal compounds and esters of (alkyl-hydroxyphenyl)-carboxylic acids with polyols. Molding compositions made from polyoxymethylenes so stabilized may be thermoplastically processed; they are suitable for the manufacture of semi-finished and finished goods.

3,743,615
FAST DRY REFINISH PAINTS
Andrew Edward Yethon, Otterburn Heights, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada
No Drawing. Filed May 15, 1972, Ser. No. 253,436
Claims priority, application Canada, May 20, 1971, 113,555
Int. Cl. C09d *3/64*
U.S. Cl. 260—22 CB **10 Claims**

A fast dry refinish composition which is a copolymer formed from vinyl or acrylic monomers and an acrylate-modified alkyd. The acrylate-modified alkyd is prepared by first forming a hydroxyl group-containing ester by ester exchange reactions between a polyol, a drying oil and a high boiling alkyl acrylate such as laurylmethacrylate, and then reacting the hydroxyl group-containing ester with an organic dibasic acid such as phthalic acid. The composition has the property of fast air drying and is suitable for refinish applications.

3,743,616
ELASTOMER-BASED PRESSURE SENSITIVE ADHESIVE COMPOSITION
Donald O. Kest, 6258 Fairhaven Road, Mayfield Heights, Ohio 44124
No Drawing. Continuation-in-part of abandoned application Ser. No. 843,793, July 22, 1969. This application May 17, 1971, Ser. No. 144,293
Int. Cl. C09j *3/14, 3/16, 3/26*
U.S. Cl. 260—27 BB **23 Claims**

A pressure sensitive adhesive product is produced by casting on a substrate web, such as paper, plastic film,

or metal foil, a layer of an admixture consisting essentially of:

(A) a diene polymer having at least 1.6 terminal functional groups and an equivalent weight of 500 or more,

(B) an organic coreactant having about 2 or more coreactive groups, and

(C) at least 75 parts, per 100 parts of the diene polymer and the organic coreactant, of a tackifying resin or mixture of tackifying resins having a ball and ring softening point of 60° to 140° C. that has been predissolved in the diene polymer, and coreacting the diene polymer and the organic coreactant in situ on the substrate web to give a pressure sensitive adhesive product. The diene polymer and the organic coreactant, plus any other ingredients, reactive with the diene polymer and the organic coreactant that are used, are chosen so that the pressure sensitive adhesive polymer formed on the substrate web has the character of an elastomer.

3,743,617

URETHANE BASE PRESSURE SENSITIVE ADHESIVE

Donald O. Kest, 6258 Fairhaven Road, Mayfield Heights, Ohio 44124

No Drawing. Continuation-in-part of abandoned application Ser. No. 843,750, July 22, 1969. This application May 17, 1971, Ser. No. 144,337

Int. Cl. C09j *3/14, 3/16, 3/26*

U.S. Cl. 260—27 BB **26 Claims**

A pressure sensitive adhesive product is produced by casting on a substrate web, such as paper, plastic film, or metal foil, a layer of an admixture consisting essentially of;

(A) a diene polymer or copolymer having at least 1.6 terminal active-hydrogen groups and an equivalent weight of 500 or more,

(B) an organic polyisocyanate and

(C) at least 75 parts per 100 parts of the diene polymer and the organic polyisocyanate of a tackifying resin or mixture of tackifying resins having a ball and ring softening point of 60° to 140° C. that has been predissolved in the diene polymer, and coreacting the diene polymer and the organic polyisocyanate in situ on the substrate web to give a pressure sensitive adhesive product. The diene polymer and the organic polyisocyanate, plus any other ingredients coreactive with the diene polymer and the organic polyisocyanate that are used, are chosen so that the pressure sensitive adhesive polymer formed on the substrate web has the character of an elastomer.

3,743,618

ADHESIVE COMPOSITION HAVING LOW ADHESIVE STRENGTH WHEN WET AND HIGH ADHESIVE STRENGTH WHEN DRY

Haruhiko Arai, Narashino, Chiba, Shoji Horin, Ichikawa, Chiba, and Iwao Maruta, deceased, late of Funabashi, Chiba, Japan, by Kiyoko Maruta and Yoshi Maruta, heirs, Funabashi, Chiba, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,462 Claims priority, application Japan, Aug. 8, 1969, 44/62,799

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 R **5 Claims**

An adhesive composition comprising a high molecular vinyl compound water solubilized by being dissolved in a resin acid anionic surface active agent solution and additionally containing particles of a non-dissociative inorganic material to reduce the spinnability and improve the workability of the adhesive composition.

3,743,619

PROCESS FOR THE PRODUCTION OF SUSPENSIONS OF PHENOL-FORMALDEHYDE RESINS

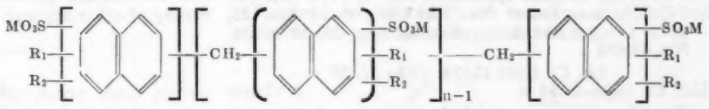
Kazunori Kooguchi and Osamu Ito, Kawasako, Nobusake Makayama, Yokohama, and Yoshio Miyahara and Korenori Murai, Tokyo, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,382 Claims priority, application Japan, Dec. 29, 1969, 44/993

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **7 Claims**

A process for the production of a suspension of a phenol-formaldehyde resin which comprises dispersing said resin into water, and using as dispersing agent an inorganic salt of naphthalenesulfonic or alkylnaphthalenesulfonic acid-formaldehyde condensate of the general formula:



wherein M is alkali metal or ammonium *n* is an integer of 1–9, and R_1 and R_2 are hydrogen or alkyl containing from 1 to 4 carbon atoms. A salt of a polyoxyethylenealkylsulfate or alkylphenylsulfate of the general formula:

$$R—O—(C_2H_4O)_n·SO_3M$$

wherein R is alkyl or alkylphenyl wherein the alkyl group contains 8–18 carbon atoms, *n'* is an integer of at most 6 and M is alkali metal or ammonium, may be added as an auxiliary dispersing agent.

3,743,620

POLYURETHANE SOLUTIONS AND METHODS FOR THE PRODUCTION OF UNIFORMLY MICROPOROUS POLYURETHANE SHEET MATERIAL THEREFROM

Bernard Frye, Waldwick, N.J., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,040

Int. Cl. C08g *51/44*

U.S. Cl. 260—32.6 NR **1 Claim**

A solution of a polyurethane polymer containing a substance, such as an alkali metal halide, to improve the properties of a microporous film prepared from the solution and a process for preparing a uniformly microporous film from such a solution are provided.

3,743,621

POLYURETHANE RESINS

Hyman M. Molotsky, Chicago, Ill., assignor to CPC International Inc.

No Drawing. Original application Apr. 2, 1968, Ser. No. 718,195. Divided and this application Aug. 6, 1971, Ser. No. 61,016

Int. Cl. C08g *22/14*

U.S. Cl. 260—37 N **5 Claims**

Covers polyurethane resins. Particularly covers polyurethane resins formed by reacting an organic polyisocyanate and an alkoxylated starch hydrolysate prepared by alkoxylating a starch hydrolysate containing at least one reducing saccharide. The resins may be used as coatings or foams, either of the flexible or rigid type, as binders in the foundry process of making cores or molds, or for other uses. Also covers a method of preparing the above polyurethanes.

3,743,622

POLYAMIDE RESIN-DYE COMPOSITIONS AND METHODS DF MAKING THE SAME

Edgar R. Wagner and Charles W. Gould, New York, N.Y., assignors to Charles W. Gould and Edgar R. Wagner, both of New York, N.Y.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,895

Int. Cl. A61k *7/12;* **C08g** *51/04, 51/14*

U.S. Cl. 260—38 **35 Claims**

A resin-dye complex for topical application to human and non-human keratinous materials and synthetic fibers, said complex being made of a polyamide-polyamine compound reacted with a heat-reactive phenolic material having appreciable alcohol solubility, said resulting resin being complexed with a dye.

3,743,623

THIOSUCCINIC ACID HINDERED PHENOLIC ESTER POLYMER STABILIZERS

Eduard K. Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application July 5, 1968, Ser. No. 742,701, now Patent No. 3,637,809, dated Jan. 25, 1972. Divided and this application Aug. 20, 1970, Ser. No. 65,694

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.85 S **9 Claims**

Organic materials, particularly synthetic polymers such as polypropylene are protected against oxidation in air, thermal degradation or deterioration by including, in such substances, a stabilizing amount of antioxidant. The antioxidant is obtained by reacting (a) an α,β - unsaturated ester of a hindered hydroquinone and (b) hydrogen sulfide or a mercaptan. The ensuing compound is a hindered phenolic ester of a hydrocarbyl thio succinic acid.

3,743,624

BENZOFUROISOQUINOLINE POLYMERS AND METHOD FOR SYNTHESIZING SAME

Fred E. Arnold, Centerville, Albert J. Sicree, Dayton, and Richard L. Van Deusen, Xenia, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force

Filed Oct. 6, 1972, Ser. No. 295,787

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **10 Claims**

Benzofuroisoquinoline ladder polymers are prepared by the condensation of 2,3,7,8-tetraaminodibenzofuran with an aromatic tetracarboxylic acid or a dianhydride thereof. The polymers possess a high degree of thermal stability, a property which renders them particularly suitable for use in high temperature applications such as in the fabrication of plastic composites, fibrous materials and protective coatings.

3,743,625

1,4-BIS-[BENZOXAZOLYL-(2')]-NAPHTHALENE DERIVATIVES

Hans Frischkorn, Hofheim, Taunus, and Ulrich Pintschovius and Horst Behrenbruch, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Application Sept. 29, 1970, Ser. No. 76,622, which is a continuation-in-part of abandoned application Ser. No. 655,768, July 25, 1967. Divided and this appplication July 19, 1972, Ser. No. 273,322

Claims priority, application Germany, July 27, 1966, F 49,793; July 6, 1967, F 52,873

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 N **2 Claims**

1,4-bis[benzoxazolyl-(2')] - naphthalenes having carboxy or carboxylic acid ester groups on the benzoxazole groups, which compounds are excellent optical brighteners, especially for polyamides and polyesters.

3,743,626

HYDROCURABLE OXAZOLIDINE-ISOCYANATE COMPOSITIONS

William D. Emmons, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 768,905, Oct. 18, 1968. This application Jan. 30, 1970, Ser. No. 7,270

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AQ **21 Claims**

Compositions comprising an oxazolidine and a polyfunctional aliphatic or aromatic isocyanate cure in the presence of moisture to give polymeric materials. The compositions can be used in forming films, fibers, paints, seamless flooring, coatings, impregnants, and adhesives for both natural and synthetic materials, as well as in a wide variety of other applications.

3,743,627

PHOTOGRAPHIC ELEMENTS CONTAINING SYNTHETIC POLYMERIC VEHICLES

Donald Arthur Smith and Donald M. Copenhagen, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Apr. 22, 1968, Ser. No. 723,279, now Patent No. 3,637,394. Divided and this application May 3, 1971, Ser. No. 139,857

Int. Cl. C08f *27/08*

U.S. Cl. 260—78.4 D **9 Claims**

Novel synthetic polymers derived from poly(vinyl alcohol) useful as hardenable gelatin replacements in compositions, photographic emulsions and elements, and a process for preparing said polymers are disclosed.

3,743,628

SOLID PHASE SYNTHESIS OF PEPTIDES

Miklos Bodanszky, Shaker Heights, Ohio, and John T. Sheehan, Middlesex, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 829,127, May 29, 1969, which is a continuation-in-part of application Ser. No. 559,381, June 22, 1966, both now abandoned. This application Oct. 16, 1970, Ser. No. 81,531

Int. Cl. C08f *19/02;* **C07c** *103/52*

U.S. Cl. 260—88.2 S **3 Claims**

A process for bonding an amino acid to an insoluble hydroxymethyl polymer by esterifying the C-terminal carboxyl group of an N-terminal protected amino acid with the hydroxyl group of an insoluble hydroxymethyl polymer. The esterifying takes place at about room temperature in the presence of a condensing agent. The insoluble hydroxymethyl polymer is a hydroxymethylated copolymer of styrene and divinylbenzene, hydroxymethylcellulose, hydroxymethylated sulfonated polystyrene or polyvinyl alcohol. The condensing agent is dicyclohexylcarbodiimide, carbonyldiimidazole, thionyl chloride, phosphorous oxychloride or ethoxyacetylene. Peptides can be formed by bonding one or more amino acids to the amino acid bonded to the insoluble hydroxymethyl polymer.

3,743,629

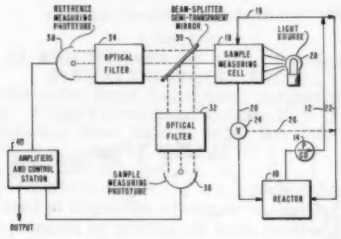
POLYMERIZATION MONITORING PROCESS

Donald W. Fraga, 402 Ave. E., Redondo Beach, Calif. 90277

Continuation-in-part of application Ser. No. 738,244, June 19, 1968. This application July 12, 1971, Ser. No. 161,848

Int. Cl. C08f 7/04

U.S. Cl. 260—93.5 S 7 Claims



A continuous indication of the active chain concentration in a homogeneous solution polymerization reaction admixture comprising lithium initiated polymers of vinyl arenes is obtained by comparing the absorbance of different narrow band width wavelengths of transmitted ultraviolet, visible or infrared, radiation by an active portion of the reaction admixture.

3,743,630

STYRENE POLYMERIZATION WITH RING SUBSTITUTED ALKYL PERBENZOATES AND NEW BRANCHED CHAIN ALKYL PERBENZOATES

Donald W. Wood, Concord, Calif., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 107,535, Jan. 18, 1971, which is a continuation-in-part of application Ser. No. 814,449, Apr. 8, 1969, both now abandoned. This application June 30, 1971, Ser. No. 158,583

Int. Cl. C08f 1/60, 7/04

U.S. Cl. 260—93.5 W 33 Claims

Use of ring substituted alkyl perbenzoates alone or in combination with benzoyl peroxide for polymerization of styrene monomer to polystyrene. New branched chain t-alkyl perbenzoates have the same utility. Typical is use of t-butyl per o-methoxy benzoate and 1,1,3,3-tetramethylbutyl perbenzoate.

3,743,631

PROCESSING OF CATALYST-CONTAINING POLYISOPRENE SOLUTIONS

Manfred Beck, Johann Schüchter, Günter Marwede, and Egon Kuntz, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,086

Claims priority, application Germany, Aug. 8, 1970, P 20 39 493.8

Int. Cl. C08d 5/02, 5/04

U.S. Cl. 260—94.7 N 13 Claims

A process for isolating polyisoprene from a catalyst-containing solution thereof in an organic solvent, wherein

(1) The catalyst is deactivated in the polymer solution with an aqueous or alcoholic solution of a hydroxide of a metal of Groups 1A or 2A of the Periodic System;

(2) The deactivated solution is washed with water, stabilisers and/or modifiers optionally being added in stage 1 or stage 2;

(3) The aqueous or aqueous/alcoholic phase is separated off;

(4) An aliphatic diamine or polyamine is added, and

(5) The organic solvent is removed by steam distillation.

3,743,632

MONOAZO COMPOUNDS CONTAINING A SUBSTITUTED PHTHALIMIDE DIAZO COMPONENT

Walter Horstmann, Cologne, and Edgar Siegel, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

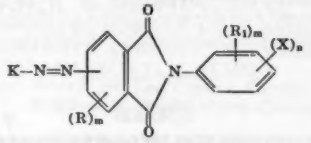
No Drawing. Filed Aug. 28, 1970, Ser. No. 67,975

Claims priority, application Germany, Sept. 3, 1969, P 19 44 702.0

Int. Cl. C09b 29/20, 29/32, 29/38

U.S. Cl. 260—152 4 Claims

Monoazo dyestuffs which are free from sulphonic acid groups and correspond to the general formula



in which K denotes the radical of a monofunctional coupling component; R and R_1 stand for identical or different substituents; X means an optionally substituted carboxylic acid hydrazide group; *m* stands for an integer from 0 to 3; and *n* stands for the numbers 1 or 2, as well as processes for their production and their use as pigment dyestuffs.

3,743,633

$\Delta^{4,20,22}$ - BUFATRIENOLIDE RHAMNOSIDE ACYLATES AND METHODS FOR THEIR PREPARATION

Bruno Goerlich, Mannheim, Hugo Kubinyi, Leimen, and Walter Steidle, Limburgerhof, Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

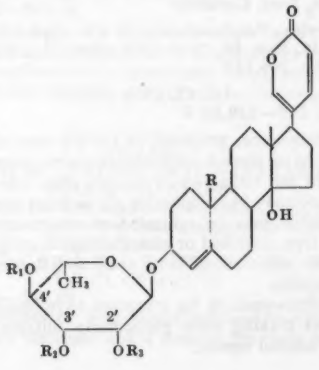
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,853

Claims priority, application Germany, Jan. 9, 1969, P 19 00 898.1; May 31, 1969, P 19 27 908.4

Int. Cl. C07c 173/00

U.S. Cl. 260—210.5 11 Claims

Defined $\Delta^{4,20,22}$-bufatrienolide rhamnoside acylates of the formula



wherein R is methyl or formyl, R_1–R_3 are hydrogen or acyl, and at least one of R_1–R_3 is acyl, and method of making the same by acylation of the corresponding hydroxy compounds and separation of any mixed reaction products by column chromatography and/or countercurrent distribution.

3,743,634

2-DEOXYSTREPTAMINE DERIVATIVE AND ACID-ADDITION SALTS

Peter W. K. Woo, Detroit, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed May 14, 1971, Ser. No. 143,620

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 S **5 Claims**

N^1-(4-amino - 2 - hydroxybutyryl)-4-O-(2,6-diamino-2,6-dideoxy-D-glucopyranosyl) - 2 - deoxystreptamine and acid-addition salts. These compounds have a wide spectrum of antibacterial activity. They can be produced by acidic treatment of N^1-(4-amino-2-hydroxybutyryl)-4-O-(2,6-diamino - 2,6 - dideoxy-D-glucopyranosyl)-5-O-D-xylofuranosyl-2-deoxystreptamine or N^1-(4-amino-2-hydroxybutyryl) - 4-O-(2,6 - diamino-2,6-dideoxy-D-glucopyranosyl)-5-O-D-ribofuranosyl-2-deoxystreptamine.

3,743,635

27-DEMETHOXY-27-HYDROXYRIFAMYCIN DERIVATIVES

Carlo Hengeller, Naples, Giancarlo Lancini, Pavia, and Piero Sensi, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed July 17, 1970, Ser. No. 55,956

Claims priority, application Italy, July 29, 1969, 20,216/69

Int. Cl. C07d *41/00*

U.S. Cl. 260—239.3 P **3 Claims**

Antibiotic substances of the rifamycin family, namely species of 27-demethoxy-27-hydroxyrifamycin, are produced by cultivating a mutant of *Streptomyces mediterranei* in an aqueous nturient media and isolating the antibiotics from the fermentation medium by extraction. The antibiotics exhibit antibacterial activity, particularly against various Gram negative bacteria.

3,743,636

TRIALKYLSILYLOXIMO STEROIDS

Werner Hartmann, Kurt Barnikol-Oettler, and Gerhard Teichmüller, Jena, Germany, assignors to Veb Jenapharm, Jena, Germany

No Drawing. Continuation-in-part of application Ser. No. 885,616, Dec. 16, 1969. This application Dec. 8, 1971, Ser. No. 206,153

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **27 Claims**

An androstane, pregnane or estrane steroid compound having one or more trialkylsilyl-ketoxime groups attached to one of the rings and/or as part of a side chain. The compound may be in optically active form or a racemate. Its molecule may be saturated or unsaturated and may contain free, esterified or etherified hydroxyl groups, ketal groups or other substituents such as halogen, alkene or alkine groups.

The compounds of the invention have pharmacological properties making them particularly suitable for use as fertility control agents.

3,743,637

PHENANTHROTRIAZOLYL DERIVATIVES

Fritz Fleck, Bottmingen, Basel-Land, and Horst Schmid, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

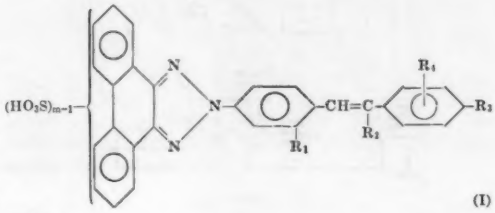
No Drawing. Filed Aug. 4, 1971, Ser. No. 169,134

Claims priority, application Switzerland, Aug. 14, 1970, 11,257/70

Int. Cl. C07d *55/02*

U.S. Cl. 260—240 C **11 Claims**

Phenanthrotriazolyl derivative of formula



(I)

where

R_1 and R_4, independently of each other, stand for H, F, Cl, CN, COOH, SO_3H, alkylsulphonyl, arylsulphonyl, an amide or ester of carboxylic acid or sulphonic acid or R_1 jointly with R_2 for —O—CO,

R_2 for H or —O—CO—,

R_3 for R_1, alkyl with 1 to 12 carbon atoms or optionally substituted phenyl or jointly with R_4 for

$$—CH=CH—CH=CH—$$

when R_4 is vicinal to R_3 and

m is 1, 2 or 3.

3,743,638

POLYMETHINE DYES

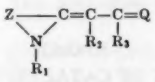
Frank G. Webster and Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Mar. 19, 1970, Ser. No. 21,210. Divided and this application Apr. 19, 1971, Ser. No. 135,358

Int. Cl. C09b *23/10*

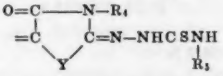
U.S. Cl. 260—240.4 **5 Claims**

A novel class of dyes especially useful as sensitizers for photographic silver halide emulsions and electrographic coatings of zinc oxide having the following structure:



wherein Z represents the atoms required to form a basic heterocyclic nucleus; R_1 is an alkyl or aryl radical; R_2 and R_3 are selected from the group consisting of a hydrogen atom, lower alkyl radical or aryl radical and Q is a radical selected from:

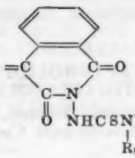
(a)



wherein R_4 is selected from the group consisting of a hydrogen atom, an alkyl radical or an aryl radical and Y is selected from the group consisting of an oxygen atom, a sulfur atom or a selenium atom and R_5 is selected from

the group consisting of a hydrogen atom, an alkyl atom or an aryl atom; or

(b)



wherein R_6 has the same designated value as R_5.

3,743,639

OPTICAL BRIGHTENER OF THE COUMARINYL-STYRYLTRIAZOLE SERIES

Hans Schlapfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 8, 1970, Ser. No. 53,302
Int. Cl. C07d *55/02*
U.S. Cl. 260—240 D **1 Claim**

2-[3-phenylcoumarinyl-(7)] - 4 - m-chlorostyryl-v-triazole is used as brightener of organic materials. The compound is prepared by splitting off water from isonitroso-m-chlorobenzalacetone - [3 - phenylcoumarinyl-(7)]-hydrazone.

3,743,640

NOVEL DYES CONTAINING A SUBSTITUTED 2-PYRAZOLIN-5-ONE NUCLEUS

Frank G. Webster, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original appplication Sept. 8, 1967, Ser. No. 666,512, now Patent No. 3,579,344, dated May 18, 1971. Divided and this application June 22, 1970, Ser. No. 59,818
Int. Cl. C09b *23/10*
U.S. Cl. 260—240.2 **8 Claims**

Novel merocyanine and oxonol dyes are provided which feature a 3-arylamino or a 3-lower fatty acid amido substituted 2-pyrazolin-5-one nucleus. Merocyanine dye salts of the invention sensitize direct positive photographic silver halide emulsions.

3,743,641

1,2,4-OXADIAZINE-3,6-TRIONES

Daniel Makula and Monique Druet, Lyon, and Beatrice Gonthier, Caluire, France, assignors to Progil, Paris, France

No Drawing. Original application Apr. 1, 1970, Ser. No. 24,859, now Patent No. 3,696,099. Divided and this application May 5, 1972, Ser. No. 250,568
Claims priority, application France, Apr. 3, 1969, 6909530
Int. Cl. C07d *87/52*
U.S. Cl. 260—244 R **4 Claims**

New 1,2,4-oxadiazine-ones, useful as algicides, bactericides and fungicides, are obtained by reacting an N-hydroxy-urea and a dihalogenated organic derivative having halogen atoms on two adjacent carbon atoms.

3,743,642

TRIAZINE DERIVATIVES

Matthias Schwarzmann, Limburgerhof, Guenther Gotsmann and Peter Heinze, Ludwigshafen, Ernst Heinrich Pommer, Limburgerhof, and Rudolf Mohr, Lampertheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,760
Int. Cl. C07d *55/22, 55/20*
U.S. Cl. 260—249.6 **3 Claims**

New and valuable substituted triazine derivatives having a good fungicidal action and a process for controlling fungi with these compounds.

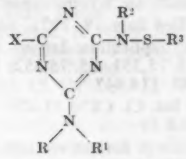
3,743,643

SUBSTITUTED TRIAZINES

Melancthon S. Brown, deceased, late of Berkeley, Calif. (by Gustave K. Kohn, administrator), assignor to Chevron Research Company, San Francisco, Calif.

Filed May 12, 1971, Ser. No. 142,758
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **10 Claims**

Triazines of the formula



wherein X is halogen or alkylthio; R is hydrogen or alkyl; R^1 and R^2 are individually alkyl and R^3 is aryl optionally substituted with halogen atoms, alkyl groups or alkoxy groups, are useful as herbicides.

3,743,644

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3-[S-(ISOTHIAZOL-3-, 4- AND 5-YL)CARBONYL]THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,030
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **50 Claims**

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-[S-(isothiazol-3, 4-, and 5-yl)carbonyl]thiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many-Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,743,645

1-SUBSTITUTED-4-PHENOXYPIPERIDINES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Application Nov. 7, 1970, Ser. No. 874,987, which is a continuation-in-part of abandoned application Ser. No. 786,392, Dec. 23, 1968. Divided and this application Oct. 19, 1970, Ser. No. 82,116
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.74 **9 Claims**

1-substituted-4-phenoxypiperidines useful as tranquilizers are disclosed. The compounds are prepared by reacting 4-phenoxypiperidine intermediates which are prepared from 4-piperidinol with compounds containing active halides.

3,743,646

AMIDES OF 3-(2-HALOPHENYL-5-TETRAZOLYL) PROPIONIC ACIDS

Robert Thomas Buckler, Edwardsburg, Mich., and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,136
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.69 **3 Claims**

Certain amides of 3-(2-halophenyl-5-tetrazolyl)propionic acids are disclosed and a method for their prepara-

tion. These compounds are useful as antiinflammatory agents and produce less gastric irritation than the acids from which they are prepared.

3,743,647

NICOTINOYLAMINOETHANESULFONYLAMINOTHIAZOLE AND PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shun-Ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Filed July 19, 1971, Ser. No. 164,007

Claims priority, application Japan, Aug. 27, 1970, 45/75,350, 45/75,351, 45/75,352; Dec. 18, 1970, 45/114,446, 45/114,447

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 D **2 Claims**

Aminoethanesulfonyl derivatives having a general formula R—$SO_2CH_2CH_2Y$ where R is selected from a group consisting of thiazolyl-2-amino, 1-pyrrolyl, 4-methylpiperazyl, and 1-indolyl and Y is NH_2 or, when R is thiazolyl-2-amino, said Y may be nicotinoylamino as well as manufacture methods thereof were disclosed.

3,743,648

SUBSTITUTED (TRIFLUOROMETHYL)PYRIDYL PHOSPHATES AND PHOSPHOROTHIOATES

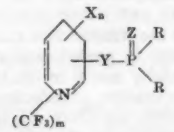
Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,668, Dec. 18, 1970. This application Dec. 1, 1971, Ser. No. 203,904

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 K **13 Claims**

Novel substituted (trifluoromethyl)pyridyl phosphates and phosphorothioates of the formula:



wherein Y and Z each independently represent oxygen or sulfur; each R independently represents loweralkoxy, loweralkylthio, loweralkylamino or amino; each X independently represents hydrogen, bromo, chloro or fluoro; *n* represents an integer of from 0 to 3, both inclusive, and *m* represents an integer of 1 or 2. The compounds are suitable for use as pesticides in the control of various mite, tick, insect, bacterial and fungal organisms and nematodes.

3,743,649

SYNTHESIS OF 2-(2-HYDROXYPHENYL)-BENZOTHIAZOLE

Joseph G. Wirth, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed July 30, 1971, Ser. No. 167,833

Int. Cl. C07d *91/44*

U.S. Cl. 260—304 **5 Claims**

An improved process for making 2-(2-hydroxyphenyl) benzothiazole involves the reaction of 2-aminothiophenol and phenyl salicylate. The reaction is carried out in an inert atmosphere at elevated temperature where the reactants are molten. Preferably, the phenol produced in the reaction is permitted to distill from the reaction mixture. Although not necessary, a catalyst, for example, imidazole can be used to speed up the reaction. The subject compound is an organic phosphor which fluoresces green when exposed to ultraviolet light and can be used to impart fluorescent properties to plastic compositions or it can be converted to derivatives that have improved fluorescent properties.

3,743,650

2-(2',5'-DIMETHYLPYRROLIDINYL)-5-ARYL-1,3,4-THIADIAZOLES

Norman A. Dahle, Shawnee Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Original application Oct. 24, 1969, Ser. No. 869,328, now Patent No. 3,677,737. Divided and this application Dec. 13, 1971, Ser. No. 207,526

Int. Cl. C07d *99/08*

U.S. Cl. 260—306.8 D **4 Claims**

A small group of 2-(2',5' - dimethylpyrrolidinyl)-5-phenyl - 1,3,4 - thiadiazoles, in which the phenyl ring may have chloro or methyl substituents, possess herbicidal properties superior to compounds of similar structural formulas. Various compounds of the group are useful for controlling unwanted vegetation in soybeans, cotton and small grains.

3,743,651

N-(3,5 - DIHALOGENOPHENYL)-OXAZOLIDINE COMPOUNDS AND PREPARATION THEREOF

Akira Fujinami, Ashiya-shi, Toshiaki Ozaki, Keiichiro Akiba, and Sigeo Yamamoto, Osaka-fu, Shigehiro Ooba and Katsutoshi Tanaka, Takarazuka-shi, Katsuji Nodera, Nishinomiya-shi, Tadashi Ooishi, Osaka-fu, and Nobuyuki Kameda, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Co., Ltd., and Hokko Chemical Industry Co., Ltd.

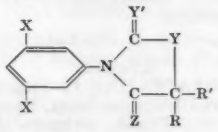
No Drawing. Filed Jan. 6, 1970, Ser. No. 1,064

Claims priority, application Japan, Feb. 1, 1969, 44/7,452; Apr. 21, 1969, 44/31,144

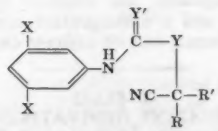
Int. Cl. C07d *85/44*

U.S. Cl. 260—307 C **9 Claims**

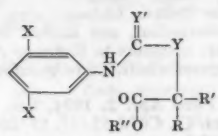
N-(3,5-dihalophenyl)-oxazolidine compounds of the formula:



wherein R and R' are each hydrogen or lower alkyl, X is halogen, Y and Y' are each oxygen or sulfur and Z is oxygen or imino, provided that Z is imino when both of Y and Y' are oxygen and both of X are chlorine, useful as anti-microbial agents, which can be prepared by reacting a carbamic acid derivative of either one of the formulae:



and



wherein R'' is hydrogen or lower alkyl and R, R', X, Y and Y' are each as defined above with a base or with a base and then an acid.

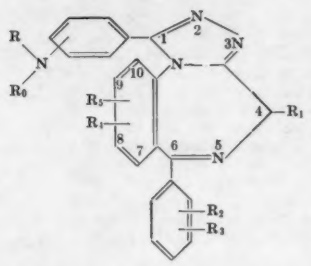
3,743,652

1-AMINOPHENYL-4H-s-TRIAZOLO[4,3-a][1,4] BENZODIAZEPINES

Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 2, 1971, Ser. No. 194,911
Int. Cl. C07d *57/02*
U.S. Cl. 260—308 R 3 Claims

1 - (aminophenyl) - 6 - phenyl - 4H - s - triazolo[4,3-a] [1,4]benzodiazepines of the Formula II:



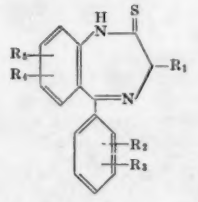
(II)

wherein R and R_0 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon, atoms, inclusive, and alkenyl of 3 to 4 carbon atoms, inclusive; wherein R_1 is selected from the group consisting of hydrogen, alkyl defined as above, —$COOCH_3$, —$COOC_2H_5$, and

—$COOCH_2CH_2CH_3$;

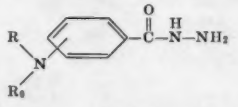
and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, amino, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfonyl, and alkylsulfinyl, alkanoylamino, in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and dialkylamino, in which the alkyl group is defined as above.

The process of this invention consists in heating a 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thione of the Formula I



(I)

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above, with an aminobenzoyl hydrazide of the Formula III



wherein R and R_0 are defined as above, in an organic solvent, to give the compounds of Formula II above.

The compounds of Formula II above, and the pharmacologically acceptable acid salts thereof are sedative and tranquilizing reagents.

3,743,653

HYDROXYETHYLATION WITH ETHYLENE SULFATE

Stephen Marburg, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,263
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 5 Claims

A process for the preparation of 2-(p-fluorophenyl)-1-(2 - hydroxyethyl)-5-nitroimidazole starting with 2-(p-fluorophenyl)-4-(5-)nitroimidazole and ethylene sulfate is disclosed. The compound so produced is an active anti-parasitic agent.

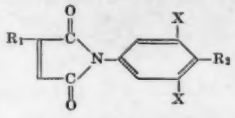
3,743,654

N-PHENYLMALEIMIDE DERIVATIVES

Akira Fujinami, Ashiya-shi, Toshiaki Ozaki, Toyonaka-shi, Keiichiro Akiba, Takarazuka-shi, Sigeo Yamamoto, Toyonaka-shi, Katsuji Nodera, Nishinomiya-shi, Katsutoshi Tanaka, Takarazuka-shi, and Tadashi Ooishi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 11, 1969, Ser. No. 857,217
Claims priority, application Japan, Oct. 9, 1968, 43/73,800
Int. Cl. C07d *27/18*
U.S. Cl. 260—326.5 FM 10 Claims

Novel N-phenylmaleimide derivatives preferable as microbicides which are represented by the formula



wherein R_1 represents a hydrogen atom, a halogen atom, a lower alkyl group or a phenyl group, which may have been substituted by a halogen atom; R_2 represents a hydrogen atom, a lower alkyl group or a halogen atom; and X represents a halogen atom, provided that in case R_1 and R_2 are hydrogen atoms, X represents other halogen atom than a chlorine atom. Examples of such derivatives are:

N-(3′,5′-di-bromo or iodo-phenyl) maleimides,
N-(3′,4′,5′-trihalogenophenyl) maleimides,
N-(3′,5′-dihalogeno-4′-alkylphenyl) maleimides,
N-(3′,5′-dihalogenophenyl)-3-methylmaleimides,
N-(3′,5′-dihalogenophenyl)-3-phenylmaleimides, and
N-(3′,5′-dihalogenophenyl)-3-(halogenophenyl) maleimides.

These compounds are prepared by cyclizing corresponding maleic acid monoanilides under dehydration conditions.

3,743,655

PREPARATION OF 2-ALKYL-4-OZO-2,3,4,5,6,7-HEXAHYDROBENZO[b]THIOPHENES

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,896
Int. Cl. C07d *63/22*
U.S. Cl. 260—332.3 P 4 Claims

2 - alkyl - 4 - oxo-2,3,4,5,6,7-hexahydrobenzo[b]thiophenes and alkyl (C_1–C_3) substituted derivatives are prepared by reacting 2-allyl-3-chloro-2-cyclohexen-1-one or a derivative thereof having alkyl substituents on the allyl side chain with sodium hydrosulfide to effect ring closure. The oxo-compounds so produced can be dehydrogenated to produce alkyl-substituted-2,3-dihydro-4-hydroxybenzo [b]thiophene and converted to carbamate insecticides.

3,743,656

THIOPHENE AND FURAN LOWER ALKANOIC ACIDS AND DERIVATIVES

Kevan Brown, Reading, and John Frederick Cavalla, Isleworth, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

No Drawing. Continuation-in-part of application Ser. No. 821,075, May 1, 1969, now Patent No. 3,644,399. This application Sept. 15, 1971, Ser. No. 180,840
Int. Cl. C07d *63/12*
U.S. Cl. 260—332.2 A 16 Claims

The invention concerns diaryl furan and thiophene lower alkanoic acids and derivatives which are pharmacologically efficacious as anti-inflammatory agents.

3,743,657

ESTERS OF 1,3-PENTADIENE-1-CARBOXYLIC ACID AND PROCESS FOR PREPARING SAME

Toshio Watanabe, Takatsuki, Ryoichi Higuchi, Kyoto, Akihiro Yamato, Suita, and Kazuo Sakai, Ikeda, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 11, 1971, Ser. No. 172,341
Claims priority, application Japan, Aug. 20, 1970, 45/73,330, 45/73,331
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 14 Claims

A compound of the formula:

R—OH

wherein R is a radical selected from the group consisting of benzyl, methylbenzyl, methoxybenzyl, trimethoxybenzyl, dimethylaminobenzyl, phenethyl, phenylpropyl, methylenedioxyphenyl - propyl, octyloxyphenyl - propyl, bornyl, 2-methoxy-4-allylphenyl, 3,7-dimethyl-2,6-octadiene-1-yl and methylenedioxycinnamyl, is condensed with 1,3-pentadiene-1-carboxylic acid, or the corresponding acid halide or acid anhydride. The compounds of the formula:

$CH_3—CH=CH—CH=CH—COOR$

wherein R has the same meaning as defined above, are produced. These compounds are useful as a deodorant.

3,743,658

PROCESS FOR PREPARING α-PYRONES

Johann F. Klebe, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Feb. 24, 1969, Ser. No. 806,775
Int. Cl. C07d *7/16*
U.S. Cl. 260—343.5 5 Claims

α-Pyrones can be prepared by reacting a lower fatty acid halide with a Lewis acid catalyst at elevated temperatures in the substantial absence of a solvent. The α-pyrones thus produced are useful for biological purposes and as intermediates for making polymeric compositions.

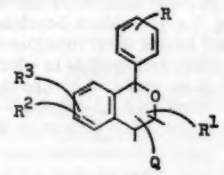
3,743,659

SUBSTITUTED ISOCHROMANS AND PROCESSES THEREFOR

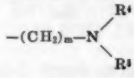
Murle W. Klohs, Tarzana, Calif., and Francis J. Petracek, Bloomington, and Nobuyuki Sugisaka, New Brighton, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 855,457, Aug. 25, 1969. This application Aug. 25, 1971, Ser. No. 174,992
Int. Cl. C07d *7/20*
U.S. Cl. 260—345.2 79 Claims

Amino-substituted 1-phenyl isochromans of the formula



wherein R is hydrogen, lower alkyl, halogen, trifluoromethyl, amino, N-lower alkylamino or N,N-di-lower alkylamino; R^1 is hydrogen or lower alkyl, R^2 and R^3 are each hydrogen, lower alkyl, lower alkoxy, hydroxy, halogen or trifluoromethyl and Q is a radical attached to either the 3 or 4 position, having the structure



wherein R^4 and R^5 are independently hydrogen, lower alkyl or hydroxy-lower alkyl or, when taken together with the nitrogen atom to which they are attached, form a 5- or 6-membered nitrogen-containing ring having from 3 to 5 carbon atoms in the ring, one of which may be replaced by an oxygen atom, *m* is zero to 4 and when *m* is 1 or more, the alkylene chain may contain a substituent methyl group; and salts thereof. Processes for the preparation of said intermediate compounds and final products are disclosed. The final products of the invention have utility as CNS-active agents, e.g. anticonvulsants, antidepressants and anorectic agents.

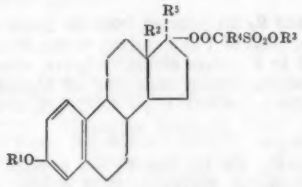
3,743,660

17-SULFO-ACETATES OF ESTRADIOL

Poul Borrevang, Rodovre, and Erling Guddal, Skovlunde, Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen N, Denmark

No Drawing. Filed July 27, 1971, Ser. No. 166,609
Claims priority, application Great Britain, Aug. 3, 1970, 37,397/70
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 8 Claims

Novel and pharmaceutically active steroid compounds of the estrane series having the general Formula I



in which R^1 is selected from the group consisting of hydrogen; alkyl; cycloalkyl; and heterocycloalkyl,

R^2 is a lower alkyl group,

R^3 is selected from the group consisting of hydrogen; alkyl; aryloxyalkyl; and an alkali metal or an alkaline earth metal atom,

R^4 is alkylene such as methylene, ethylene and trimethylene and

R^5 is selected from the group consisting of hydrogen and ethinyl,

and amine salts of the above compounds of the Formula I in which R^3 is hydrogen; and methods for their preparation as well as pharmaceutical compositions comprising the present steroid compounds as an active ingredient.

3,743,661

5,6-TRANS-25-HYDROXYCHOLECALCIFEROL

Hector F. De Luca, Michael F. Holick, and Michele Garabedian, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,183
Int. Cl. C07c *171/10*
U.S. Cl. 260—397.2 1 Claim

5,6-trans-25-hydroxycholecalciferol. The compound exhibits some antirachitic activity but is primarily characterized by its ability to stimulate intestinal calcium transport while having little if any ability to stimulate mobilization of calcium from bone in nephrectomized animals.

3,743,662

CATALYST FOR THE HYDROGENATION OF OILS

Jacobus J. M. G. Eurlings, Valkenburg, John W. Geus, Geleen, and Cornelis A. M. Weterings, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed May 28, 1970, Ser. No. 41,511
Claims priority, application Netherlands, Oct. 4, 1969, 6915061
Int. Cl. C11c *3/12*
U.S. Cl. 260—409 7 Claims

The present invention relates to a process of hydrogenating oil at elevated temperature, by means of a cata-

lyst containing elementary copper and nickel on a thermostable carrier material. The catalyst is obtained in three separate steps; in the first step a homogeneous layer of hydrated nickel oxide is precipitated onto the thermostable carrier material, in the second step an insoluble copper compound is precipitated in homogeneous distribution onto the layer of hydrated nickel oxide, and in the third step the loaded carrier material is subjected to a reductive treatment at a temperature above 150° C.

3,743,663

HEXAHYDRO-FLUOREN-2-YLOXY ALKANOIC ACIDS AND ESTERS THEREOF

Gerhard Baschang, Bettingen, Basel-Stadt, Joerg Frei, Binningen, Basel-Land, Charles Morel, Arlesheim, Basel-Land, and Oskar Wacker, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 8, 1970, Ser. No. 53,293
Claims priority, application Switzerland, July 9, 1969, 10,456/69
Int. Cl. C07c *3/00, 69/76*
U.S. Cl. 260—413 **4 Claims**

2-(4b,5,6,7,8,8a-hexahydrofluoren - 2 - yloxy)- and 2-(4b,5,6,7,8,8a-hexafluoren - 2 - ylthio)-alkanoic acids and esters thereof, as well as alkali-metal and alkaline-earth-metal salts of such acids, which compounds exhibit hypolipemic and anti-inflammatory activity. An illustrative embodiment is 2-(4b,5,6,7,8,8a-hexahydrofluoren - 2 - yloxy)-heptanoic acid.

3,743,664

PROCESS FOR PREPARING ORGANIC ISOCYANATES

Nicholas B. Franco, Brookfield, Conn., and Martin A. Robinson, Flushing, N.Y., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,530
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC **10 Claims**

A process for preparing an organic isocyanate which comprises reacting an organic nitro compound with carbon monoxide in the presence of a catalytic proportion of a noble metal isocyanide complex.

3,743,665

STABILIZED ISOCYANATE COMPOSITION

Kenji Naito, Katsuhiko Ogino, and Hiroshi Okudo, Toyonaka, Michio Tanaka, Suita, Yoshio Kamatani, Osaka, Hiroshi Mukai, Toyonaka, and Tatsuro Takeuchi, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 19, 1970, Ser. No. 47,913
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 SP **17 Claims**

Stabilized organic isocyanate composition containing an organic ester or esters of isocyanic acid such as xylene, ω,ω'-diisocyanate in combination with a stabilizer which is one or more of the acyl isocyanates encompassed by the formula

$$R^1—CX—NCY$$

$$R^2(CX—NCY)_2$$

$$R^1—SO_2—NCO$$

wherein each of X and Y is O or S, R^1 is an alkyl, aralkyl, aryl, all of which may be substituted by one or more halogens, $—NO_2$, —CN, alkyl or alkoxy, and R^2 is a bivalent hydrocarbon residue, the amount of the acyl isocyanate or acyl isocyanates being about 0.001 to 1.0 percent by weight relative to the organic isocyanate ester. The present invention also involves a method of stabilizing an organic isocyanate ester by incorporating the aforementioned stabilizer or stabilizers therein.

3,743,666

INTERMEDIATES FOR THE PREPARATION OF 4-AMINOMETHYLCYCLOHEXANE - 1 - CARBOXYLIC ACID

Masao Murayama and Eisuke Seto, Kyoto, Takashi Okubo, Uji, and Iwao Morita and Itsuo Dobashi, Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

No Drawing. Original application Nov. 6, 1970, Ser. No. 87,582. Divided and this application Jan. 24, 1972, Ser. No. 220,496
Claims priority, application Japan, Nov. 29, 1969, 44/95,862, 44/95,863, 44/95,864, 44/95,865
Int. Cl. C07c *121/46, 121/48*
U.S. Cl. 260—464 **7 Claims**

4-cyano-4-hydroxycyclohexane-1,1-dicarboxylic acid, 4-cyano-3-cyclohexene-1,1-dicarboxylic acid and the esters thereof are chemical intermediates for the preparation of predominantly trans-4-aminomethylcyclohexane-1-carboxylic acid. The cyclohevane-1, 1-dicarboxylic acid or an ester thereof is dehydrated to yield the corresponding 3-cyclohexene derivative which is reduced and decarboxylated, optionally with hydrolysis of an ester group, to yield the desired compound.

3,743,667

ALICYCLIC NITRILES

Kuno Wagner and Manfred Hajek, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 26, 1969, Ser. No. 880,420. Divided and this application Jan. 27, 1972, Ser. No. 221,418
Claims priority, application Germany, Dec. 14, 1968, P 18 14 832.8
Int. Cl. C07c *121/46, 121/48, 121/66*
U.S. Cl. 260—464 **5 Claims**

Novel aldimines and ketimines which contain hydroxymethyl groups are provided. These new compounds are prepared by reacting Schiff's bases which have active hydrogen atoms in α-position to the $>C=N$-group with formaldehyde or formaldehyde yielding compounds. The new compounds can be used as plasticizing chain lengthening agents for the preparation of polyurethane plastics.

3,743,668

CYANOETHYLATION OF AMINOPHENOLS

Daniel F. Scully, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed June 1, 1971, Ser. No. 148,988
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E **7 Claims**

Excellent yields of monocyanoethylated and dicyanoethylated aminophenols can be obtained by admixing acrylonitrile with aqueous solutions of aminophenol salts such as potassium aminophenate. No other catalyst or solvents are required. The reaction proceeds exothermically at temperatures as low as 0° C. and the process may be operated advantageously up to temperatures of about 100° C.

3,743,669

REACTION OF ACRYLIC TYPE COMPOUNDS WITH ALDEHYDES AND CERTAIN KETONES

Melville E. D. Hillman, Gillette, and Anthony B. Baylis, North Plainfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,591
Int. Cl. C07c *69/76, 121/02*
U.S. Cl. 260—465.6 **12 Claims**

Acrylates, acrylonitrile, acrylamides or vinyl ketones are readily reacted, even at ambient temperature, with an aldehyde in the presence of an organic tertiary amine catalyst to produce the corresponding 2-(1-hydroxyalkyl)-acrylates, acrylonitriles, acrylamides or vinyl ketones in very good yields. These product monomers having an —OH moiety in their structure exhibit, upon polymerization, good adhesive properties.

3,743,670

B-IODOETHYL ESTER OF TRICHLOROACETIC ACID

Henry Martin, Basel, Ernst Beriger, Allschwil, and Ludwig Ebner, Stein, Aargau, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

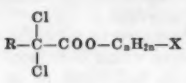
No Drawing. Continuation of application Ser. No. 647,577, Apr. 1, 1967, now abandoned, which is a division of application Ser. No. 559,363, May 3, 1966, now Patent No. 3,394,168, which in turn is a division of application Ser. No. 256,254, Feb. 5, 1963, now abandoned. This application Sept. 10, 1970, Ser. No. 71,242

Claims priority, application Switzerland, Feb. 15, 1962, 1,850/62

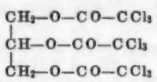
Int. Cl. C07c *69/62*

U.S. Cl. 260—487 1 Claim

Compounds having the general formula:



in which R is chlorine, methyl or chloroalkyl of from 1 to 3 carbon atoms, *n* is an integer ranging from 1 to 4, and X is hydrogen, halogen, alkenyl, alkynyl, alkoxy or —COOA where A represents alkyl; and the compound having the formula



are active herbicidal agents.

3,743,671

CYCLOPENTANE COMPOUNDS HAVING ODORANT PROPERTIES AND PREPARATION THEREOF

Paul Jose Teisseire and Andre Marc Galfre, Grasse, France, assignors to S.A. des Etablissements Roure-Bertrand Fils & Justin Dupont, Grasse, France

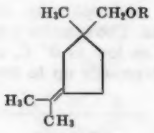
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,536

Claims priority, application Switzerland, Nov. 6, 1969, 16,649/69

Int. Cl. C07c *29/00, 35/02, 67/00, 69/14, 69/24, 69/74, 69/78*

U.S. Cl. 260—488 R 8 Claims

Compounds of the formula



wherein R is hydrogen or lower acyl are useful odorants finding utility in perfume formulations.

3,743,672

SEPARATION OF WATER IN ALKYLENE GLYCOL MONO AND DIESTER PURIFICATION BY AZEOTROPIC DISTILLATION

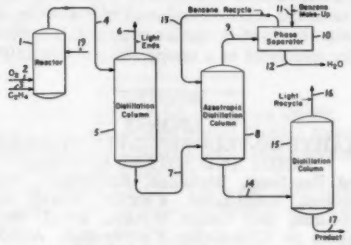
John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc.

Filed May 27, 1970, Ser. No. 40,990

Int. Cl. B01d *3/36;* C07c *67/06*

U.S. Cl. 260—497 A 11 Claims

This invention relates to a process for separating water from a reaction mass obtained by the catalytic oxidation of olefins to the corresponding alkylene glycol di and mono esters. More specifically, the invention teaches a



method of separating water from the halogen containing components of the oxidation catalyst.

3,743,673

SINGLE STEP SULFOXIDATION PROCESS

John Douglas Downer, Ronald Maurice Skinner, David Robert Reed, and Donald Patrick Hope-Ross, Pointe-a-Pierre, Trinidad, West Indies, assignors to Texaco Trinidad, Inc., Trinidad, West Indies

No Drawing. Filed May 26, 1970, Ser. No. 40,740

Int. Cl. C07c *139/00*

U.S. Cl. 260—504 R 11 Claims

Saturated aliphatic hydrocarbons are converted to aliphatic sulfonic acids in a single step without any initiator but in the presence of a low molecular weight acyl oxide and under anhydrous conditions with continuous removal of the products as they are being formed. The reactants are agitated throughout the reaction which is carried out at 25–55° C. at a pressure ranging from 0 to 100 p.s.i. The alkali metal salts of the sulfonic acids prepared by this process are useful as biodegradable detergents.

3,743,674

REMOVING NICKEL CARBONYL FROM CRUDE PROPIONIC ACID

Heinz Hohenschutz, Mannheim, and Paul Hornberger and Horst Buelow, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed June 30, 1972, Ser. No. 267,986

Int. Cl. C07c *51/14, 51/42*

U.S. Cl. 260—540 4 Claims

An improved process for the removal of nickel carbonyl from crude propionic acid containing it (which has been obtained by reacting of ethylene with carbon monoxide and water in the presence of nickel carbonyl) by treatment with a gas containing oxygen, the improvement comprising carrying out the treatment countercurrent in a trickling phase and using 5 to 20 $m.^3$ of the inert gas containing 3 to 10% by volume of oxygen per $m.^3$ of crude propionic acid containing nickel carbonyl. Propionic acid is used for the production of propionic esters and for the treatment of feedstuffs.

3,743,675

N-(PHENYL-CARBAMYL)-AMINO-BENZENE-SULFONYL FLUORIDES

Ludwig Konrad Huber, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

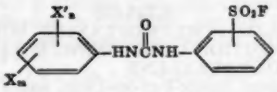
No Drawing. Filed July 10, 1972, Ser. No. 270,348

Int. Cl. C07c *143/70*

U.S. Cl. 260—543 P 8 Claims

Novel substituted N - (phenyl - carbamyl) - amino-benzene-sulfonyl fluorides having useful biological activity

which has been demonstrated in inhibiting bacterial growth as well as fungal growth. These N-(phenyl-carbamyl)-amino-benzene-sulfonyl fluorides have the general formula:



wherein X is chlorine, bromine, trifluoromethyl, methoxy or fluorosulfonyl; X' is hydrogen, chloride, bromines, trifluoromethyl, methoxy or fluorosulfonyl; *m* is a whole number from 1 to 3, and *n* is a whole number from 1 to 3.

3,743,676

1-AMINOPHOSPHOLENE-1-OXIDES

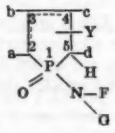
Curtis P. Smith, Cheshire, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,813

Int. Cl. C07d *105/02*

U.S. Cl. 260—551 P **3 Claims**

Compounds are disclosed having the general formula:



wherein *a*, *b*, *c* and *d* are each selected from the group consisting of hydrogen, halogen, alkoxy of 1 to 6 carbon atoms, inclusive, phenoxy, hydrocarbyl and halogen substituted hydrocarbyl; said hydrocarbyl having 1 to 6 carbon atoms, inclusive; F is selected from the group consisting of hydrogen, alkyl of 1 to 12 carbon atoms, inclusive and hydroxyalkyl of 2 to 6 carbon atoms, inclusive; G is hydroxyalkyl of 2 to 6 carbon atoms, inclusive; the broken line indicates a double bond located between the carbon atom at position 3 and one of the two carbon atoms at positions 2 and 4; Y is hydrogen and is attached to which ever carbon atom of those at positions 2 and 4 is not part of said double bond. Disclosed also are methods of preparing the novel compounds.

The compounds of the invention are useful as surfactants and as reactive flame retardant components of polymer systems such as polyolefins, polyurethanes and polyesters.

3,743,677

CONTINUOUS MANUFACTURE OF BIS(AMINOCYCLOHEXYL)-ALKANES OR BIS(AMINOCYCLOHEXYL)ETHERS

Otto-Alfred Grosskinsky and Karl Merkel, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,732

Int. Cl. C07c *85/14*

U.S. Cl. 260—563 D **4 Claims**

Continuous process for the hydogenation of bis(aminophenyl) alkanes to bis(aminocyclohexyl) alkanes using suspended hydrogenation catalysts, in which the heat of reaction is substantially removed from the reaction vessel by means of a recycled liquid.

3,743,678

HAIR DYEING COMPOSITIONS

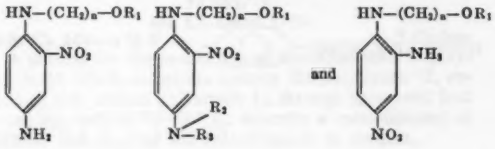
Alexander Halasz, Norwalk, Conn., assignor to Clairol Incorporated, New York, N.Y.

No Drawing. Original application May 24, 1965, Ser. No. 458,443. Divided and this application Feb. 28, 1968, Ser. No. 723,970

Int. Cl. C07c *91/06*

U.S. Cl. 260—573 **5 Claims**

Compounds of the following formulae which are useful in hair dyeing compositions are disclosed:



wherein *n* is a whole number of 1 to 4, R_1 is alkyl of 1 to 8 carbon atoms and R_2 and R_3 are hydroxyalkyl of up to 8 carbon atoms.

3,743,679

THIOETHER DERIVATIVES OF 1-HALO-3-MERCAPTO-2-PROPANOL

Richard A. Hickner and Corwin J. Bredeweg, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 764,956, Oct. 3, 1968. This application Aug. 9, 1971, Ser. No. 170,298

Int. Cl. C07c *149/18*

U.S. Cl. 260—609 R **13 Claims**

Compounds of the structure $R(SCH_2CHOHCH_2X)_n$ when $n=1$ to 4 and R is a hydrocarbon, ether, ester, acetal, hydroxy aliphatic, hydroxy aromatic, imide or amide group or halogenated derivatives thereof are prepared by reacting 1-halo-3-mercapto-2-propanol with an aliphatically unsaturated compound using free radical initiators as catalysts. The compounds in which R is an unsaturated aliphatic hydrocarbon group of 2 to 24 carbon atoms, or an unsaturated cycloaliphatic group, and those in which the aliphatic or cycloaliphatic group is connected to two or more —S—$CH_2CHOHCHCl$ groups, and compounds where R is an alkylene substituted aromatic group and hydroxy, thioalkyl, alkoxy, aryloxy, ester, carbamidoalkyl and sulfamidoalkyl, halogenated derivatives of said groups are new compounds. The thioether halohydrins can be converted to epoxides. The process utilizing a radioactive energy source as a catalyst is new.

3,743,680

PHENOL POLYSULFIDES AND MERCAPTOPHENOLS

Emil J. Geering, Grand Island, and George B. Stratton, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Dec. 30, 1968, Ser. No. 788,075. Divided and this application May 21, 1971, Ser. No. 145,959

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 D **14 Claims**

A process is described for preparing polythiobisphenols and converting these into mercaptophenols. The reaction between a phenol and sulfur as catalyzed by iodine or bromine is interrupted before completion and the product,

a phenol polysulfide mixture is reduced to mercaptophenol. A continuous process is described wherein phenol monosulfides are converted to a phenol.

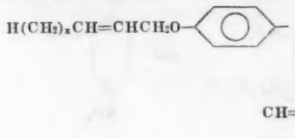
3,743,681

PREPARATION OF LIQUID-CRYSTAL COMPOUNDS

Heinz J. Dietrich, and Edward L. Steiger, both of Toledo, Ohio, assignors to Owens-Illinois, Toledo, Ohio

Filed May 18, 1971, Ser. No. 144,671
Int. Cl. C07c 119/00
U.S. Cl. 260—566 F 3 Claims

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x is an integer of 0 to 10 and y is the same or different integer of 1 to 10. The compounds are prepared by the reaction of para-n-alkylaniline and para-n-alkenyloxybenzaldehyde.

3,743,682

AN ELECTROPHOTOGRAPHIC DEVELOPER COMPOSITION CONTAINING BORON NITRIDE

Walter Crooks, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 8,008, Feb. 2, 1970, Pat. No. 3,632,337.
This application Oct. 12, 1971, Ser. No. 188,502
Int. Cl. G03g 9/02
U.S. Cl. 252—62.1 2 Claims

Wetting by toners of the surface of reusable photoconductors in electrophotographic processes results on image cycling in adhesion of the toner to the photoconductor surface to form a film. Such filming is reduced or eliminated by introducing into the system a small amount of boron nitride.

3,743,683

OXIDATIVE DEHYDROGENATION PROCESS

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, and Maigonis Gabliks, Highland Park, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 459,878, May 28, 1965. This application June 11, 1970, Ser. No. 45,556
Int. Cl. C07c 5/18
U.S. Cl. 260—680 10 Claims

Improved oxidative dehydrogenation catalysts can be prepared by modifying metal ferrite oxidative dehydrogenation catalysts with titanium or zirconium. For example, a promoting amount of zirconium oxide, 10%, can be added to manganese ferrite. The improvement may be in conversion, selectivity or yield or in temperature of operation.

3,743,684

CATALYST, CATALYST PREPARATION METHOD, AND PROCESS FOR CATALYTIC HYDROTREATING UNSATURATED HYDROCARBONS

Marvin M. Johnson and Donald C. Tabler, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,613
Int. Cl. C07c 11/00
U.S. Cl. 260—681.5 R 4 Claims

A method for hydrotreating unsaturated hydrocarbon feedstreams containing monoolefins, diolefins, or acetylenes by contacting the feedstream with an iron-containing catalyst; the iron-containing hydrotreating catalyst; and a method for preparing the aforementioned hydrotreating catalyst.

3,743,685

ANTISTATIC THERMOPLASTIC POLYESTER COMPOSITION CONTAINING SULFONATED POLYOXYALKYLENE

Pierre Grosjean, Sainte-Foy-les-Lyon, and Yves Vaginay, Lyon, France, assignors to Societe Rhodiaceta, Paris, France

No Drawing. Filed July 9, 1971, Ser. No. 161,930
Claims priority, application France, July 9, 1970, 7026571
Int. Cl. C08g 39/10
U.S. Cl. 260—860 14 Claims

Antistatic thermoplastic compositions which have good resistance to soiling and can easily be shaped are disclosed, wherein the composition contains from 1 to 7% by weight of a sulfonated polyoxyalkylene having an average molecular weight above 500 and the general formula:

$$R—[—O—(CH_2)_m—SO_3M]_p$$

wherein R is a polyoxyalkylene radical having a molecular weight of Z and containing n hydroxyl groups, n is between 1 and 6, $p \leq n$ the degree of hydroxyl group blockage, expressed by the formula

$$\frac{p \times 100}{n}$$

is greater than 80%, Z/n is greater than 100, m is 1 to 4, and M is an alkali or alkaline earth metal.

These compositions are useful for the manufacture of filaments, films, molded articles and the like.

3,743,686

UNSATURATED POLYESTER RESINS WHICH CURE IN THE PRESENCE OF WATER AND WHICH CONTAIN AT LEAST ONE DEHYDRO MONOMER

Stanley D. Koch, Beachwood, and Arthur H. Gerber, University Heights, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

No Drawing. Filed June 18, 1971, Ser. No. 154,657
Int. Cl. C08f 11/02, 21/02, 43/02
U.S. Cl. 260—861 14 Claims

A process for the strengthening, sealing, or joining of solid surfaces in the presence of moisture by means of unsaturated polyester resin composition containing dehydro monomers; and the unsaturated polyester resin compositions and dehydro monomers required therefor.

3,743,687

LOWER ALKYL-S-[1 - BROMOPROPYL-(2)-MERCAPTOMETHYL]-(THIONO) THIOLPHOSPHORIC OR PHOSPHONIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, and Ingeborg Hammann and Wolfgang Behrenz, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 23, 1970, Ser. No. 57,750
Claims priority, application Germany, Aug. 16, 1969, P 19 41 705.1
Int. Cl. A01n 9/36; C07f 9/08
U.S. Cl. 260—948 4 Claims

(Optionally halogen-substituted) lower alkyl-S-[1-bromopropyl - (2) - mercaptomethyl] - (thiono)thiolphosphoric or -phosphonic acid esters, e.g. O,O-dimethyl- or -diethyl - S - [1 - bromopropyl - (2) - mercaptomethyl]-thionothiolphosphoric acid ester, which possess arthropodicidal, especially acaricidal and insecticidal, properties, and process for their preparation.

3,743,688

PROCESS FOR PREPARING PROPANE TRIPHOSPHONIC LOWER ALKYL ESTERS

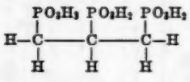
Allan D. Nicholson, Springfield Township, Hamilton County, and Darrel Campbell, Fairfield, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Original application Dec. 27, 1967, Ser. No. 694,002. Divided and this application Oct. 21, 1970, Ser. No. 82,819

Int. Cl. C02b *5/06*; C07f *9/40*

U.S. Cl. 260—970 7 Claims

A class of vicinal polyphosphonates, propane-1,2,3-triphosphonates, are prepared by reacting a propargyl compound, such as propargyl alcohol, a hydrogen dialkylphosphite and an alkali metal promoter such as sodium at a temperature of about 20° C.–100° C. for from about 5 minutes to about 30 hours. The novel class of compounds consist of propane triphosphonic acid



lower alkyl esters, and water soluble alkali metal salts thereof. The compounds are useful as detergency builders, sequestering agents, anti-calculus agents.

ERRATUM

For Class 264—69 see:
Patent No. 3,743,272

3,743,689

METHOD FOR MANUFACTURING SHAPED ARTICLES FROM FABRIC SECTIONS

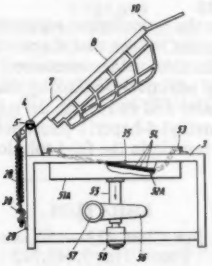
Benno Saladin, Sirnach, Switzerland, assignor to Saladin A.G., Sirnach, Switzerland

Original application Jan. 27, 1969, Ser. No. 793,978, now Patent No. 3,635,629, dated Jan. 18, 1972. Divided and this application Mar. 4, 1971, Ser. No. 120,864

Claims priority, application Germany, Apr. 1, 1968, P 17 78 135.0

Int. Cl. B29c *17/04*

U.S. Cl. 264—92 5 Claims



A shaped article, such as a floor covering for a vehicle, is made from a plurality of interconnected sections of fabric having a pile and including a thermosetting or thermoplastic plastics material. During forming of the article on a two-part press, en order to prevent the pile from being flattened, the pile surface of the joined together and properly oriented sections is engaged by a grid-like press part only in the regions of the joints between the section. The press includes a trough-shaped receiving press part and a pivotally mounted top press part which is movable to engage over the article which is positioned in the trough-shaped part. The top press part is favored as a grid with projecting portions such as tubes which engage the article being formed at least at the junctures of sections or portions of the article which are to be arranged at an angle to one or more other portions. The tubes advantageously carry means for selectively cooling or heating the article to apply a desired thermal treatment for permanently forming the article.

3,743,690

PROCESS FOR THE PRODUCTION OF MONOFILAMENTS OF POLYAMIDE 12

Hans-Peter Lys, Chur, and Kaspar Ryffel, Domat-Ems, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,838

Claims priority, application Switzerland, Oct. 8, 1970, 14,883/70

Int. Cl. D01d *5/08*

U.S. Cl. 264—178 F 7 Claims

A process for the production of monofilaments of polyamide 12 which comprises melting the polyamide 12, extruding said melted polyamide 12 through spinnerets into a cooling bath at 35–50° C. whereby a monofilament is formed and winding the monofilament so formed.

3,743,691

PURIFICATION OF STRONTIUM CARBONATE

Leslie J. Trew, Moraga, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed June 21, 1971, Ser. No. 155,115

Int. Cl. C01b *11/18*; C22b *3/00*

U.S. Cl. 423—165 15 Claims

Strontium carbonate is purified by calcination to produce strontium oxide, the latter being hydrated to form strontium hydroxide which is dissolved in excess water. After removal of solid impurities, the strontium hydroxide solution is carbonated to precipitate purified strontium carbonate. This method of purification can be applied to a strontium carbonate produced by metathesis of a beneficiated strontium sulfate (celestite) ore.

3,743,692

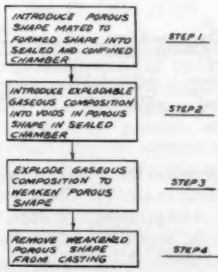
METHOD FOR THE REMOVAL OF REFRACTORY POROUS SHAPES FROM MATING FORMED MATERIALS

Clarence Samuel Vinton, Ann Arbor, and Warren Albert Rice, Dexter, Mich., assignors to Chemotronics International, Inc., Ann Arbor, Mich.

Filed June 19, 1972, Ser. No. 263,877

Int. Cl. B22d *29/00*; B28b *13/06*

U.S. Cl. 264—334 11 Claims


INTRODUCE POROUS SHAPE MATED TO FORMED SHAPE INTO SEALED AND CONFINED CHAMBER
STEP 1
INTRODUCE EXPLODABLE GASEOUS COMPOSITION INTO VOIDS IN POROUS SHAPE IN SEALED CHAMBER
STEP 2
EXPLODE GASEOUS COMPOSITION TO WEAKEN POROUS SHAPE
STEP 3
REMOVE WEAKENED POROUS SHAPE FROM CASTING
STEP 4

A method for the removal of a porous shape (including cores) with interconnected voids from a mating shape of formed material, (such as a casting) which has been prepared from the surfaces defined by the porous shape is described. A sealed chamber is provided to confine the porous shape and the mating shape. An explodable gaseous composition such as hydrogen or methane (natural gas) and oxygen or oxygen enriched air is intro-

duced into voids in the porous shape in the sealed chamber at superatmospheric pressures and exploded so as to weaken the porous shape without damaging the mating shape. The weakened porous shape is readily removed from the mating formed material, preferably as finely divided particles. This result is produced because of the uniform effect of the explosion of the gaseous composition which was homogeneously distributed throughout the interconnected voids in the porous shape.

3,743,693

PREPARATION OF MATTE-SURFACED STYRENE POLYMER FILM

Cleown A. Leatherman, Shepherd, Isabella County, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 6, 1971, Ser. No. 140,957
Int. Cl. B29c *25/00*
U.S. Cl. 264—340 **8 Claims**

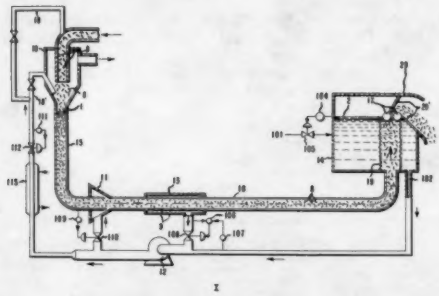
Styrene polymer film is provided with a matte surface by exposing the film to an azeotropic solvent vapor at a temperature sufficient to cause visual etching by the formation of a plurality of hollow cells and fissures on at least one surface without stress cracking of the film.

3,743,694

METHOD FOR RENDERING MICROCELLULAR STAPLE FIBERS SELF-INFLATABLE IN AIR INVOLVING THE CONTINUOUS TRANSPORTING OF THE FIBERS THROUGH A REACTION PIPELINE

Mario Thomas Cichelli, Kennett Square, Pa., David Ross Colley, Wilmington, Del., Arthur William Etchellis III, Philadelphia, Pa., and William James Smith, Delaware City, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 738,522, June 20, 1968. This application July 13, 1971, Ser. No. 162,139
Int. Cl. B29c *25/00*; B29d *27/00*
U.S. Cl. 264—343 **4 Claims**



A process is provided for rendering microcellular staple fibers self-inflatable in air. The fibers are submerged, become entangled to form clumps, or slugs, and pass through treatment pipes in "slug flow" where they are contacted with treatment liquids. All fibers have substantially the same residence time in the treatment liquids. The treatment liquids comprise: (1) "plasticizing" liquids, which plasticize the cell walls to permit fluids to diffuse into the cells, (2) "boosting" liquids, comprising impermeant inflatants which diffuse into the cells while the walls are plasticized, but normally do not permeate the cells when the walls are not plasticized, and (3) "stripping" liquids, which remove plasticizing liquid, deplasticize the cell walls and trap impermeant inflatant within the cells. Fibers so treated when exposed to air become fully inflated.

ERRATUM

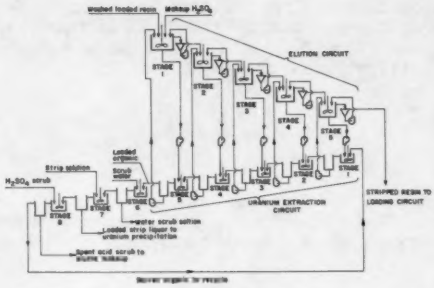
For Class 423—165 see:
Patent No. 3,743,691

3,743,695

URANIUM RECOVERY

D'Arcy R. George and John R. Ross, Salt Lake City, Utah, assignors to the United States of America as represented by the Secretary of the Interior

Filed Sept. 17, 1970, Ser. No. 72,929
Int. Cl. C01g *56/00*
U.S. Cl. 423—8 **5 Claims**



The invention relates to an improved method for recovery of uranium by elution from an ion exchange resin using sulfuric acid as the eluting agent. The elution is conducted in a series of stages, each elution stage being coupled with a solvent extraction stage, thereby achieving a substantially improved rate of uranium elution.

3,743,696

SEPARATION OF AMERICIUM AND CURIUM

George W. Mason, Clarendon Hills, Ill., Allen F. Bollmeier, Jr., Terre Haute, Ind., and Donald F. Peppard, Oak Park, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,771
Int. Cl. B01d *11/04*
U.S. Cl. 423—10 **5 Claims**

A process for the quantitative separation of americium values from curium values and from other trivalent actinide and lanthanide values contained in a nitric acid feed solution by selectively oxidizing the americium to a higher valence state and extracting the oxidized americium with bis(2,6-dimethyl-4-heptyl) phosphoric acid while the trivalent values remain in the feed solution.

ERRATUM

For Class 423—166 see:
Patent No. 3,743,725

3,743,697

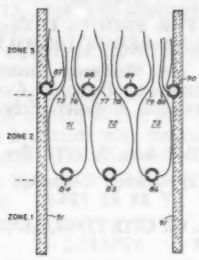
PROCESS OF CALCINATION

John B. Jones, Jr., Denver, Colo., assignor to Paraho Corporation, Boulder, Colo.

Filed Oct. 28, 1971, Ser. No. 193,462
Int. Cl. C04b *7/44, 1/00*
U.S. Cl. 423—175 **15 Claims**

A calcining process provides a vertical vessel having an upper feed and a lower product withdrawal with the introduction of a plurality of introductions of a predetermined ratio of gas-air mixture into at least three levels in the vessel producing three distinct zones to provide an expanded residence time in the vessel for the material being calcined but at controlled temperatures and high efficiency. Specifically, a process for the production of lime

from precursors of lime, feeds a uniform rate of crushed stone into a vertical kiln, withdraws a quantity of lime to maintain a predetermined level of stone in the kiln; introduces a lean gas-air mixture into the bottom of the



bed, a rich mixture of gas-air in a lower combustion zone and a lean mixture of gas-air in an upper combustion zone to calcine the precursors at about 80% efficiency based on the gas input.

3,743,698
PROCESS FOR MANUFACTURING BORON HALIDES

Gunter Kratel and Georg Vogt, Sankt Mang, Bavaria, Germany, assignors to Elektroschmelzwerk Kempten G.m.b.H., Munich, Bavaria, Germany

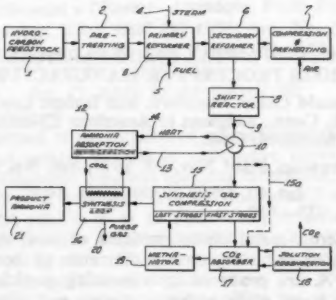
No Drawing. Filed Nov. 13, 1970, Ser. No. 89,479
Claims priority, application Germany, Nov. 18, 1969, P 19 57 949.8
Int. Cl. C01c *9/00*
U.S. Cl. 423—292 **5 Claims**

A process for manufacturing boron halides which comprises reacting a mixture of boron carbide or its constituent elements, and a boride of a metal of the first, second or third main groups of the Periodic System, with a halogen.

3,743,699
PROCESS FOR AMMONIA MANUFACTURE

Marcel J. P. Bogart, Whittier, Calif., assignor to Fluor Corporation, Los Angeles, Calif.

Filed May 27, 1971, Ser. No. 147,408
Int. Cl. C01c *1/04;* **B01j** *9/00*
U.S. Cl. 423—359 **24 Claims**



Organic physical solvent removal of carbon dioxide and other acid gases is economic in ammonia manufacturing where the shift reactor effluent containing the acid gases and excess heat is indirectly heat exchanged with a closed absorption refrigeration cycle used to supply refrigeration for ammonia production, in lieu of mechanical compression for refrigeration.

3,743,700
PHOSPHORUS MANUFACTURE

Clyde P. Orr, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 13, 1971, Ser. No. 143,231
Int. Cl. C01b *25/02*
U.S. Cl. 423—322 **2 Claims**

In electric furnace production of elemental phosphorus, mud is fed into a drying zone from which water is continuously removed at such a rate that the concentration of water in the drying zone is maintained at less than 8% by weight, the mud being admixed with sufficient phosphorus to provide a ratio of phosphorus to dirt in the drying zone of at least 75 to 25. The process produces a dry, fluid mud which is readily recycled to the electric furnace.

3,743,701
DIAMMONIUM HYDRAZINIUM TETRAPERCHLORATE AND PROCESS OF MAKING

Theodore Chester Crawford, Brigham City, and Verdean Daugherty, Hyrum, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 27, 1968, Ser. No. 779,337
Int. Cl. C01b *11/18, 21/52;* **C06b** *11/00*
U.S. Cl. 423—386 **10 Claims**

The novel compound diammonium hydrazinium tetraperchlorate, having the formula $(NH_4)_2N_2H_6(ClO_4)_4$, prepared by reacting hydrazine hydrochloride with anhydrous ammonium perchlorate dissolved in liquid anhydrous hydrogen fluoride at about ambient temperature in a vessel, cooling to precipitate the product crystals, and separating the product crystals from the liquid phase. The product is useful as an oxidizer in rocket propellant compositions and in cured rocket propellants, and as a chemical oxidizing agent.

3,743,702
PROCESS FOR THE MANUFACTURE OF CARBON DISULPHIDE AND FOR THE RECOVERY OF SULPHUR

Francois Pierrot, 26 Rue Roussy, 69, Lyon 4eme, France, and Ghislain Schwachhofer, Chemin de Belmont, le Mas Rillier, 01 Miribel, France

Filed July 6, 1971, Ser. No. 159,735
Claims priority, application France, July 17, 1970, 7027686
Int. Cl. C01b *31/26*
U.S. Cl. 423—443 **7 Claims**

A process for the recovery of sulphur from a gaseous mixture of carbon disulphide and hydrogen sulphide by reacting the gaseous mixture with sulphur dioxide in the presence of water at a temperature below the melting point of sulphur and under pressure, and then separating the aqueous phase from the solution of sulphur in CS_2 and distilling off the CS_2 to isolate the sulphur.

3,743,703
METHOD OF PREPARING SYNTHETIC DIAMONDS

Alexei Iosifovich Prikhna, ulitsa Vyshgorodskaya 33, kv. 20; Alexandr Alexandrovich Shulzhenko, ulitsa Novo-Konstantinovskaya 17, kv. 27; and Margarita Yakovlevna Katsai, ulitsa Dorogozhitskaya 24, kv. 39, all of Kiev, U.S.S.R.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,867
Claims priority, application U.S.S.R., Jan. 19, 1970, 1514366
Int. Cl. C01b *31/06*
U.S. Cl. 423—446 **2 Claims**

Diamond is synthesized by subjecting a mixture of graphite and a metal catalyst to a temperature of at least

1150° C. and a pressure of at least 40 kbars, throughout the entire volume of the catalyst there being dispersed graphite crystallites. The process enables one to prepare a large number of separate, small, well defined diamond monocrystals in a relatively short time. The diamond product has high abrasion properties.

3,743,704

REMOVAL OF HF FROM AN HF-CONTAINING GAS

Norman Eugene West, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 12, 1971, Ser. No. 142,755

Int. Cl. C01f *11/22*

U.S. Cl. 423—490 **4 Claims**

HF is removed from an HF-containing gas by scrubbing the gas with water, whereby the HF from the gas enters the aqueous phase to form an aqueous solution of HF, and the gas phase is vented as virtually HF-free gas. Precipitation of the fluoride ion in the aqueous solution as CaF_2 is carried out by adding $Ca(OH)_2$, $CaCO_3$, or a mixture thereof to the solution. Settling of the precipitate is improved by adding $CaSO_4$ to the aqueous solution during the reaction forming the precipitate. The resultant precipitate is readily filterable from the aqueous phase. The aqueous phase which remains is virtually HF-free and can be reused for scrubbing HF-containing gas. The neutralization reaction which accompanies addition of the $Ca(OH)_2$ or $CaCO_3$ to the aqueous solution can be carried out in two steps, first to partially neutralize the solution, e.g. pH up to 6 so that the solution is still able to be pumped to a settling tank for example, and second to complete neutralization in the settling tank. The $CaSO_4$ addition can be postponed until addition of $Ca(OH)_2$, $CaCO_3$ or mixture thereof to the settling tank.

3,743,705

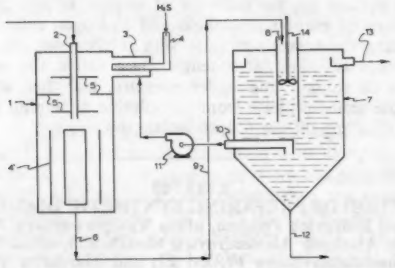
PROCESS OF RECOVERING COPPER VALUES

Clark A. Sumner, Orange, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 20,002, Mar. 16, 1970. This application Oct. 12 ,1971, Ser. No. 188,545

Int. Cl. C01g *3/12, 3/00*

U.S. Cl. 423—561 **2 Claims**



A process of recovering metal values is described herein. The process involves the reaction of a soluble metal in solution with hydrogen sulfide to form solid metal sulfide crystals. A portion of the metal sulfide is recycled and contacted with the hydrogen sulfide which is adsorbed onto the surface of the solid metal sulfide. When the soluble metal contacts the adsorbed hydrogen sulfide, larger metal sulfide crystals are formed that can readily be recovered by thickening and filtration procedures.

3,743,706

PROCESS FOR THE PRODUCTION OF ORGANIC HYDROGEN PEROXIDE SOLUTION

Gerhard Kabisch and Wolfgang Kunkel, Rheinfelden, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,366

Claims priority, application Germany, Aug. 19, 1970, P 20 41 124.9

Int. Cl. C01b *15/02, 15/00*

U.S. Cl. 423—588 **9 Claims**

Organic hydrogen peroxide solutions are obtained by extracting aqueous crude hydrogen peroxide solutions arising from the anthraquinone process using as the extraction agent carboxylic acid esters having a total of 4 to 10 carbon atoms.

3,743,707

METHOD FOR PRODUCING IRON CONTAINING MATERIALS, INCLUDING FERRITES AND OXYHYDRATES

Keizo Iwase, Toshio Takada, and Masao Kiyama, Kyoto, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Original application Apr. 1, 1968, Ser. No. 742,105, now abandoned. Divided and this application Jan. 28, 1971, Ser. No. 110,408

Claims priority, application Japan, Apr. 1, 1967, 42/20,620

Int. Cl. C01g *49/02, 49/06, 49/00*

U.S. Cl. 423—594 **6 Claims**

A method is provided for the effervescent mixing and oxidation of aqueous solutions containing a suspension of iron-containing particles capable of dissolving to form hydroxoferrous complex ions. In the method, a column of aqueous solution is established in an elongated vessel containing a suspension of iron-containing particles while maintaining a flow of oxidizing gas from said gas chamber through said multi-perforated plate to effect uniform mixing of the oxidizing gas and the solution, the flow of gas being maintained to produce a precipitate comprised of ferric ions.

3,743,708

SUBMICRON METAL OXIDE PARTICLES AND THEIR PROCESS FOR MANUFACTURE

John Donald Chase, Stamford, and Robert Louis Potter, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,573

Int. Cl. C01b *29/00;* C01g *9/02*

U.S. Cl. 423—617 **5 Claims**

Submicron metal oxide particles of zinc oxide and antimony oxide having average diameters of from 100 A. to 1300 A. are produced by vaporizing particles of the metal or metal oxide within a plasma and admixing an oxidizing gas with the plasma or its tail flame whereby controlled quenching is realized. The submicron particles produced thereby have utility as plastic or coating additives.

3,743,709

PREPARATION OF HIGHLY POROUS ALUMINA

Geoffrey T. Shaw, Ottawa, Ontario, and Basil I. Parsons, Kars, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Province of Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 736,589, June 13, 1968. This application July 12, 1971, Ser. No. 161,874

Int. Cl. C01f *7/34;* B01j *11/36, 11/60*

U.S. Cl. 423—628 6 Claims

Preparation of low density highly porous aluminas having large pores by initially drying a neutral (carbonate) gel of aluminum hydroxide with the gel temperature not exceeding about 100° C. until at least about 25% by wt. of the water has been removed, followed by further drying and calcining.

3,743,710

PREPARATION OF BERYLLIUM HYDRIDE

James M. Wood, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed June 7, 1965, Ser. No. 462,788

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 14 Claims

This invention relates to a process wherein a beryllium alkyl is pyrolyzed in the vapor phase to produce beryllium hydride of high purity.

3,743,711

PROCESS FOR DOSING ALKALI AND ALKALINE EARTH METALS

Walter Rogler, Bonn, Arnold Lenz, Cologne-Stammheim, and Wilhelm Joch, Niederkassel, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 15, 1970, Ser. No. 46,511

Claims priority, application Germany, Sept. 3, 1969, P 19 44 601.6

Int. Cl. C01b *6/04;* B01j *4/00*

U.S. Cl. 423—646 3 Claims

Alkali or alkaline earth metals used in the preparation of their powder form hydrides through reaction of such metal with hydrogen are introduced in dosed form into a reaction vessel in molten form by means of a flowing pressurizing agent comprising a gaseous medium, e.g., nitrogen or argon.

3,743,712

MACROAGGREGATES OF COPPER-64 AND GELATIN, APPLICATION AND METHOD OF PREPARATION OF SAME

Christian Gelis, Montpellier, France, assignor to Commissariat a l'Energie Atomique, Paris, France

No Drawing. Filed May 18, 1970, Ser. No. 38,489

Claims priority, application France, May 28, 1969, 6917455

Int. Cl. A61k *27/04;* G01t *1/00*

U.S. Cl. 424—1 5 Claims

In a method of preparation of macroaggregates of copper-64 and gelatin for use in radioactive tracer studies, medical diagnostic tests and scanning techniques, an alkaline solution of copper-64 is added in the cold state to a solution of gelatin so as to form a copper-gelatin complex. This complex is precipitated in the hot state by a solution of tannin and the suspension obtained is then completed by addition of distilled water. The proportions are calculated so as to maintain a pH in the vicinity of 7 or in other words a neutral value and in such a manner as to ensure that the suspension does not contain copper in the ionic form of any gelatin which has remained in solution.

3,743,713

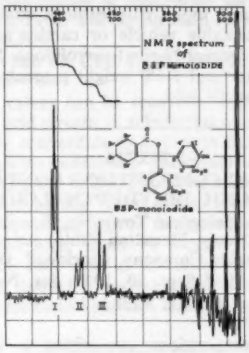
PREPARATION OF RADIOACTIVE MONO AND DI-IODOSULFOBROMOPHTHALEIN

Sadatake Kato, Tokyo, and Kunio Kurata, Matsudo, Japan, assignors to Dainabot Radioisotope Laboratories Ltd., Tokyo, Japan

Filed June 22, 1971, Ser. No. 155,546

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 3 Claims



A method of preparing radioactive mono and di-iodosulfobromophthalein for clinical purposes and wherein the ratio of di to monoiodosufobromophthalein can be controlled is disclosed. No separation and purification of the compounds is required for their use in clinical diagnostic procedures. The compounds, particularly the monoiodo compound, offer a number of advantages in comparison to sulfobromophthalein when used for biological investigation.

3,743,714

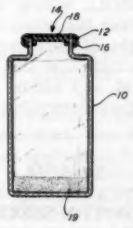
NOVEL CARRIER PREPARATIONS FOR INJECTABLE RADIOACTIVE COMPOSITIONS

Marshall E. Deutsch, Sudbury, Mass., assignor to CIS Radiopharmaceuticals, Inc., Bedford, Mass.

Filed Dec. 4, 1970, Ser. No. 95,271

Int. Cl. A61k *27/04;* A61n *5/12*

U.S. Cl. 424—1 10 Claims



There is provided a novel method of producing injectable carrier compositions for radioactive compositions which are characterized by high stability and long shelf life. In particular these compositions are directed to those requiring the absorption of the appropriate radio tracer onto a colloidal substance such as colloidal sulfur and colloidal ferric hydroxide. There are also provided means for maintaining said compositions in stable form.

3,743,715

COPOLYMER OF N-VINYL PYRROLIDONE/VINYL ESTER/UNSATURATED MONOBASIC CARBOXYLIC ACID IN A HAIR LACQUER OR LOTION

André Viout, Paris, and Christos Papantoniou, Eipnay-sur-Seine, France, assignors to Societe Anonyme dite: L'Oreal

No Drawing. Filed May 4, 1970, Ser. No. 34,580
Claims priority, application Luxembourg, May 9, 1969, 58,617
Int. Cl. A61k *1/10*
U.S. Cl. 424—47 8 Claims

Hair lacquer and lotion compositions containing in a cosmetically acceptable vehicle or carrier a copolymer of 40–90 weight percent N-vinyl pyrrolidone, 5–40 weight percent vinyl ester and 3–20 weight percent unsaturated monobasic carboxylic acid.

3,743,716

SWEETENING COMPOSITIONS CONTAINING AGLYCONIC DIHYDROCHALCONES

George P. Rizzi, Springfield Township, Hamilton County, and James S. Neely, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 30, 1970, Ser. No. 76,973
Int. Cl. A23l *1/26*
U.S. Cl. 424—49 19 Claims

Sweetening compositions comprising a co-dissolved sugar alcohol, or glycerol, and an aglyconic dihydrochalcone.

3,743,717

PROCESS FOR MANUFACTURING ANTIPERSPIRANT

Kunikatsu Okano, 455–4 Kojiya-cho, Adachi-ku, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 696,505, Jan. 9, 1968. This application Dec. 14, 1970, Ser. No. 98,034
Claims priority, application Japan, Aug. 10, 1967, 42/51,430
Int. Cl. A61k *7/00*
U.S. Cl. 424—65 3 Claims

A process for manufacturing an antiperspirant, comprising boiling a mixture of 1 to 2 parts by weight of well-dried Arabian jasmine, about 20 to 40 parts by weight of beverage tea leaves and about 10 to 20 parts by weight of seed of Chinese pepper with a liquid selected from the group consisting of water and ether for about 15 minutes to about one hour to obtain an extract liquor in a quantity of about 600 to 700 parts by weight, filtering the extract liquor to obtain a filtrate, adding to said filtrate an organic acid selected from the group consisting of about 8 to 12 parts by weight of citric acid, about 3.5 to 4.5 parts by weight of succinic acid and about 3 to 4 parts by weight of tartaric acid, and adding to said filtrate about 15 to 20 parts by weight of lemon juice.

3,743,718

METHOD OF ATTRACTING AND TRAPPING MALE MOTHS OF THE SPECIES *PARALOBESIA VITEANA*

Andre Comeau, Richmond, Quebec, Canada, and Wendell Roelofs and James Tette, Geneva, and Emil Frederick Taschenberg, Fredonia, N.Y., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,788
Int. Cl. A01n *17/14, 17/00*
U.S. Cl. 424—84 10 Claims

It has been found that cis-9-dodecenyl acetate attracts certain moths of the sub-family olethreutinae in particular the grape-berry moth, *Paralobesia viteana*. The insertion of the cis-9-dodecenyl acetate in a trap constructed to vaporize the said compound provides a means for attracting, trapping and destroying said moths without damage to the general environment. It has further been found that the addition of C_8–C_{12} alkyl, alkenyl or alkynyl acetates to the trap permits the use of far higher concentrations of the dodecenyl acetate than would be possible otherwise. Hence, permitting the attraction of the moth from a very wide area.

3,743,719

MIXTURES OF CYCLOHEXANEALKANOIC ACIDS, THEIR ESTERS AND EUGENOL AS ATTRACTANTS FOR THE JAPANESE BEETLE

Morton Beroza, Silver Spring, and Terrence P. McGovern, Bowie, Md., Paul H. Schwartz, Jr., Willingboro, N.J., and Donald W. Hamilton, Vincennes, Ind., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,793
Int. Cl. A01n *17/14*
U.S. Cl. 424—84 10 Claims

Mixtures of methyl 3-cyclohexanepropionate, ethyl 3-cyclohexanepropionate, methyl 4-cyclohexanebutyrate, or methyl cyclohexaneacetate with eugenol are attractants for the Japanese beetle. Other attractant constituents, geraniol and phenethyl butyrate, may be added without much sacrifice of attraction.

3,743,720

DRY WATER-DISPERSIBLE ALUMINUM HYDROXIDE GELS

Alan Philip Fosker, Loudwater High Wycombe, and Patrick James Mill, Beaconsfield, England, assignors to Miles Laboratories Incorporated, Elkhart, Ind.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,926
Claims priority, application Great Britain, Aug. 20, 1968, 39,876/68
Int. Cl. A61k *23/00*
U.S. Cl. 424—88 4 Claims

Dry, water-dispersible preparations of antibody-producing or immunizing substances such as allergens, with aluminum hydroxide gels adsorbed thereon produced by a process of freeze-drying a suspension of the gel in the presence of polyhydric alcohols.

3,743,721

METHOD FOR REDUCING TARTAR ACCUMULATION ON TEETH

Robert S. Mattox, 511 Pierce Ave., Macon, Ga.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,612
Int. Cl. A61k *15/12*
U.S. Cl. 424—95 5 Claims

An ingestible composition for reducing tartar accumulations on teeth. The composition consists essentially of, as the active ingredients, from about 10 to 30 percent of ascorbic acid and from about 70 to about 90 percent of bone meal based on the weight of these active ingredients. A carrier may be included. One preferred form of the composition comprises about 17 percent of ascorbic acid and about 83 percent of bone meal. The ingested total daily dosage of the composition ranges from about 2,000 to about 4,000 milligrams while one of the preferred total daily dosages of the composition is about 2,900 milligrams. For example, a tablet or capsule of the composition comprising about 165 milligrams of ascorbic acid and about 800 milligrams of bone meal taken three times daily would, in general, significantly reduce tartar accumulations on the teeth.

3,743,722

ANTI-COAGULANT ISOLATION

Chris Nolan, Village of Gurnee, Ill., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 44,580, June 8, 1970. This application July 14, 1971, Ser. No. 162,619

Int. Cl. A61k *17/00*

U.S. Cl. 424—98 6 Claims

A new, one-step process for the purification and isolation of the thrombin-like fraction of the venom of certain pit vipers is described. The simple process uses affinity chromatography for the fractionation of native venom, employing specifically buffered loading and elution solutions. The chromatographic column uses an agmatine-coupled agarose packing.

3,743,723

DISEASE CONTROL COMPOSITION FOR SILKWORMS EMPLOYING CERTAIN NAPHTHYRIDINE COMPOUNDS

Reijiro Kodama, Kyoto-fu, Yugoro Nakasuji, Toyonaka, and Nobuhiro Yamada, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

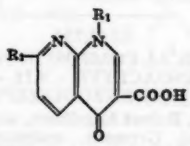
No Drawing. Filed June 10, 1970, Ser. No. 45,207

Claims priority, application Japan, June 11, 1969, 44/45,998

Int. Cl. A61k *21/00, 27/00*

U.S. Cl. 424—120 10 Claims

A disease control composition for silkworms containing a naphthyridine compound of the formula:



wherein each of R_1 and R_2 is lower alkyl and salts or esters thereof, which composition shows remarkable control of the flecherie of silkworms caused by the infectious flacherie virus and/or the nuclear-polyhedrosis virus. The aforementioned compound is especially effective when used with other anti-flacherie agents, such as macrolide antibiotics, glucosamine, etc.

3,743,724

ANTIBIOTIC COMPLEX S-3466 AND PROCESS FOR MAKING SAME

Kunio Ando, Kawasaki-shi, and Hideo Oishi, Takao Sagawa, and Seiji Hirano, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1971, Ser. No. 116,342

Claims priority, application Japan, Feb. 24, 1970, 45/15,358

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 7 Claims

An antibiotic complex designated as S-3466 and the three crystalline components isolated therefrom designated as S-3466 A, S-3466 B and S-3466 C, which are biologically active and useful as antimicrobial, insecticidal and miticidal agents, are produced by cultivating a microorganism, *Streptomyces aureus*, in a chemically defined or natural nutrient medium containing assimilable carbon sources, nitrogen sources and inorganic salts under aerobic conditions to produce antibiotic complex S-3466 in mycelium. The complex S-3466 can be separated by column chromatography into S-3466 A, S-3466 B and S-3466 C.

3,743,725

PROCESS FOR THE RECOVERY IN USEFUL FORM OF FLUORINE VALUES FROM PHOSPHATE ROCK WHILE PRODUCING PHOSPHORIC ACID

Everett N. Case, Media, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 774,960, Nov. 12, 1968. This application Nov. 4, 1971, Ser. No. 195,736

Int. Cl. C01f *1/00;* C01b *25/16*

U.S. Cl. 423—166 14 Claims

Fluorine values can be recovered from a wet process phosphoric acid stream in substantial quantities in a form that is easily convertible to hydrogen fluoride comprising reacting fluorine-containing phosphate rock with phosphoric acid having a P_2O_5 concentration between about 20 to 50 percent and being unsaturated with respect to fluorine in an attack stage at temperatures below 180° F. to dissolve at least about 90 percent of the phosphate values in the rock and to solubilize the fluorine values in the rock, thereafter lowering the temperature of said stream to precipitate out the fluorine values in a useful form.

3,743,726

PSYCHOPHARMACOLOGICAL PREPARATION

David de Wied, Bilthoven, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,519

Claims priority, application Netherlands, Sept. 26, 1970, 7014204

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 2 Claims

The invention is dealing with a pharmaceutical composition having psychopharmacological activities, said composition is containing a therapeutically acceptable carrier substance and an octapeptide of the general formula:

H-L-Cys-L-Tyr-L-Phe-L-Gln-L-Asn-L-Cys-L-Pro-Y-OR

in which

R is hydrogen or a hydrocarbon radical, and
Y is L-Arg or L-Lys,

or an acid addition salt of said octapeptide.

3,743,727

ENHANCING TISSUE PENETRATION OF CERTAIN ANTIMICROBIAL AGENTS WITH DIMETHYL SULFOXIDE

Robert John Herschler, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of application Ser. No. 753,231, Aug. 16, 1968, which is a continuation-in-part of abandoned application Ser. No. 329,151, Dec. 9, 1963. This application Nov. 16, 1970, Ser. No. 89,787

Int. Cl. A01n *19/00;* A61k *21/00*

U.S. Cl. 424—181 21 Claims

A method of enhancing tissue penetration of antimicrobial agents selected from the group consisting of sulfonamides, penicillins, antiviral agents and antibiotics produced by species of Streptomyces by conjointly applying the agent to the tissue with dimethyl sulfoxide. Penetration of the skin and the mucous membranes of the body cavities by these agents may be enhanced by conjoint application of such agents and dimethyl sulfoxide (DMSO)

directly to such membranes. Preferably, for penetration of agents through the skin compositions of DMSO at concentrations of 50% and above are employed and for penetration through mucous membranes, compositions including DMSO at concentrations of 10% and above are employed.

3,743,728

INSECTICIDAL ACTIVE COMPOSITION AND PROCESS FOR MANUFACTURING THE SAME

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Nov. 5, 1970, Ser. No. 87,333

Int. Cl. C07d *27/52*

U.S. Cl. 424—200 **4 Claims**

A process of manufacturing a liquid pesticidal active compound is described herein. The process involves the reaction of a mixture of lower aliphatic alcohols with phosphorus pentasulfide to form a mixture of dithiophosphoric acids. These acids or their salts are then reacted with N-chloromethyl phthalimide to produce a liquid mixture of products having pesticidally active properties.

3,743,729

COMBATING FUNGI WITH CHLOROALKYLTHIOL PHOSPHORIC ACID ESTERS AND ESTER AMIDES

Hellmut Hoffmann, Wuppertal-Elberfeld, and Hans Scheinpflug, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application May 8, 1968, Ser. No. 727,697, now Patent No. 3,591,663. Divided and this application Nov. 12, 1970, Ser. No. 89,044

Claims priority, application Germany, May 10, 1967, F 52,369

Int. Cl. A01n *9/36*

U.S. Cl. 424—225 **9 Claims**

O-chloroalkyl-S-(alkyl, cycloalkyl, phenyl and chloro-, alkyl-, nitro- and/or alkylmercapto- -substituted phenyl)-[O- and S-(alkyl, cycloalkyl, phenyl and chloro-, alkyl-, nitro- and/or alkylmercapto- -substituted phenyl) as well as N-alkyl and N,N-dialkyl]-thiol and -dithiol-phosphoric acid esters and -thiol-phosphoric acid ester amides, which possess fungicidal properties.

3,743,730

METHOD OF INDUCING LABOR AND PARTURITION IN ANIMALS

William M. Adams, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

No Drawing. Continuation of abandoned application Ser. No. 14,649, Feb. 26, 1970. This application June 23, 1971, Ser. No. 156,130

Int. Cl. A61k *17/00*

U.S. Cl. 424—243 **4 Claims**

This invention relates to a method for inducing labor and parturition in term or near term animals by treating the animals with a labor and parturition inducing quantity of a corticosteroid.

3,743,731

SUBSTITUTED BENZAZEPINES FOR PRODUCING SKELETAL MUSCLE RELAXATION

Lewis A. Walter, Madison, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,914

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **11 Claims**

This disclosure relates to substituted 1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines, to methods for their preparation, and to their use as muscle relaxants.

3,743,732

PROCESS FOR SUPPRESSING THE TREMOR OF PARKINSON'S SYNDROME

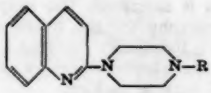
Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,238

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **3 Claims**

The tremor of Parkinson's syndrome in mammals is suppressed by the administration of a compound of the formula:



in which R is a member selected from the group consisting of H and CH_3, and nontoxic pharmacologically acceptable acid addition salts thereof. These compounds may be utilized in conjunction with pharmaceutically acceptable vehicles therefor.

3,743,733

METHOD OF TREATING BRONCHIAL ASTHMA

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,534, Dec. 21, 1970. This application July 26, 1971, Ser. No. 166,282

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **3 Claims**

Substituted quinazolins, e.g. 3a-p-anisyl-1,2,3,3a,4,5 hexahydro-pyrrolo[1,2-a]quinazolin-5-one, useful in the treatment of bronchial asthma.

3,743,734

PHARMACEUTICAL COMPOSITIONS COMPRISING AN 11 - AMINOACETYL - 5,11 - DIHYDRO-6H-PYRIDO[2,3-b][1,4]BENZODIAZEPIN-6-ONE

Gunther Schmidt, Robert Engelhorn, and Matyas Leitold, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

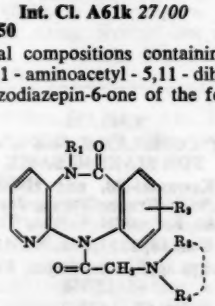
No Drawing. Original application Aug. 7, 1969, Ser. No. 848,345, now Patent No. 3,660,380. Divided and this application Feb. 9, 1972, Ser. No. 224,974

Claims priority, application Germany, Aug. 20, 1968, P 17 95 183.6

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **11 Claims**

Pharmaceutical compositions containing as an active ingredient an 11 - aminoacetyl - 5,11 - dihydro-6H-pyrido [2,3-b][1,4]benzodiazepin-6-one of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_2 is hydrogen, halogen or methyl, and

R_3 and R_4 are each straight or branched alkyl of 1 to 5 carbon atoms or, together with each other and the nitrogen atom to which they are attached, camphidino or a 5- to 7-membered saturated monocyclic heterocyclic ring which may optionally comprise an oxygen or another nitrogen ring atom and/or may optionally have an alkyl of 1 to 4 carbon atoms, hydroxy-alkyl of 1

to 4 carbon atoms, benzyl or methyl-benzyl substituent attached to a ring atom,

or a non-toxic, pharmacologically acceptaable acid addition salt thereof; the compositions are effective inhibitors of stomach ulcers and stomach juice secretion, as well as antitussives and antiemetics.

3,743,735

PHARMACEUTICAL COMPOSITIONS CONTAINING TROPANOL ESTERS OF α-PHENYL-α-CYCLOPENTYL-ACETIC ACID AND METHODS OF USE

Gerhard Walther, Ingelheim am Rhein, Rudolf Bauer, Wiesbaden, and Werner Schulz and Walther Sirrenberg, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

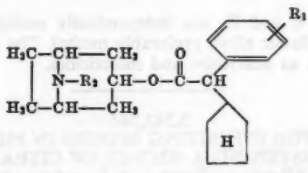
No Drawing. Original application May 26, 1971, Ser. No. 147,206, now Patent No. 3,703,523, dated Nov. 21, 1972. Divided and this application Aug. 29, 1972, Ser. No. 284,602

Claims priority, application Germany, June 1, 1970, P 20 26 661.9

Int. Cl. A61k *27/00*

U.S. Cl. 424—265 **4 Claims**

Anticholinergic pharmaceutical compositions containing as an active ingredient a racemate of a compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen, and

R_2 is hydrogen, alkyl of 2 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or, when R_1 is other than hydrogen, also methyl,

an optically active component of said racemate, a quaternary ammonium salt of said racemate or optically active component, or a non-toxic pharmacologically acceptable acid addition salt of said racemate or optically active component; and a method of blocking the passage of impulses through the parasympathetic nerves of warm-blooded animals therewith.

3,743,736

METHOD OF KILLING HELMINTHS IN WARM-BLOODED ANIMALS WITH 1,1,3 - TRISUBSTITUTED THIOUREAS AND COMPOSITIONS THEREOF

Herschel D. Porter, Lawrence Township, Marion County, and Harold M. Taylor, Washington Township, Marion County, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application May 26, 1969, Ser. No. 827,965, now Patent No. 3,659,012. Divided and this application June 23, 1971, Ser. No. 156,083

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **7 Claims**

Methods are provided for killing helminths is parasitized warm-blooded animals by orally administering 1,1,3-trisubstituted thioureas to said animals. Useful anthelmintic compositions of 1,1,3-trisubstituted thioureas are described.

3,743,737

3-SULFONAMIDO-4-HYDROXYPHENYL-2-PIPERIDINYLCARBINOL COMPOSITIONS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Application Mar. 26, 1971, Ser. No. 128,566, now Patent No. 3,661,917, dated May 9, 1972, which is a continuation-in-part of abandoned application Ser. No. 39,561, May 21, 1970. Divided and this application Jan. 24, 1972, Ser. No. 220,380

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **5 Claims**

3-sulfonamido-4-hydroxyphenyl - 2 - piperidylcarbinols prepared by appropriate reduction of 2-pyridylcarbinols or ketones have β-adrenergic stimulant activity. Erythro and threo diastereoisomers may be conveniently separated.

3,743,738

SUBSTITUTED BENZIMIDAZOLES AS ANTHELMINTIC AGENTS

Dale R. Hoff, Basking Ridge, and Michael H. Fisher, Somerville, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Mar. 5, 1970, Ser. No. 16,957, now Patent No. 3,646,049, which is a continuation-in-part of application Ser. No. 696,496, Jan. 9, 1968, which in turn is a continuation-in-part of application Ser. No. 613,746, Feb. 3, 1967, both now abandoned. Divided and this application June 2, 1971, Ser. No. 149,342

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **11 Claims**

Benzimidazoles having a heteroaryl substituent in the 2-position and a substituted amino radical at the 5- or the 6-position are compounds having significant anthelmintic activity. Benzimidazoles having the above-stated substituents at the 2- and 5- or 6-positions and further substituted at the 1-position with alkyl, aralkyl, hydroxy, acyl, carboxyalkoxy, carbamoyl, alkoxycarbonyl, alkenyloxy, or alkoxy, including substituted alkoxy, radicals are also provided. The preferable substituent in the 1-position is an alkoxy which can be substituted by a large number of radicals.

3,743,739

PHARMACEUTICAL COMPOSITIONS CONTAINING 1-BENZOYL-3,5-DIMETHYL PYRAZOLE IN THE TREATMENT OF INFLAMMATION

Jean-Claude Le Douarec, Suresnes, Laszlo Beregi, Boulogne, and Pierre Hugon, Rueil-Malmaison, France, assignors to Societe en nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,760

Claims priority, application France, Jan. 15, 1971, 7101228

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **3 Claims**

Pharmaceutical composition containing therapeutically active 1-benzoyl 3,5-dimethyl pyrazole used in topical applications, in the treatment and the prevention of pain and inflammation of skin, connective tissue or joints.

3,743,740

3,6 - DIMETHYL - 1,2,3,4,4a,9a - HEXAHYDRO-γ-CARBOLINE DIHYDROCHLORIDE FOR TREATING MENTAL DISEASES

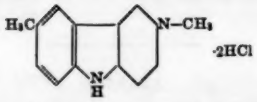
Nikolai Konstantinovich Barkov, Belyaevo-Bogorodskoe, kvartal 46–47, korpus 40, kv. 160; Ntalya Fedorovna Kucherova, Petroverigsky perulok 3, kv. 21; Nikolai Konstantinovich Kochetkov, Leninsky prospekt 13, kv. 129; Izida Grigorievna Zhukova, Konkovo-Derevlevo 6, mikroraion, korpus 27, kv. 78; and Nina Mikhailovna Sharkova, 3 Denskoi proezd 5, kv. 22, all of Moscow, U.S.S.R.

No Drawing. Original application Oct. 31, 1968, Ser. No. 873,096, now Patent No. 3,657,254, dated Apr. 18, 1972. Divided and this application Dec. 16, 1971, Ser. No. 208,909

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 5 Claims

A medicinal preparation having a psychotropic effect effect for treating mental diseases such as schizophrenia; alcoholic psychoses, and syndromum abstintentia. The preparation comprises as its active principle 3,6-dimethyl-1,2,3,4,4a,9a-hexahydro-γ-carboline dihydrochloride of the formula



The medicinal preparation can be prepared as a powder, tablet or injection solution.

3,743,741

PHARMACEUTICAL COMPOSITION BASED ON 11-HALOGEN SUBSTITUTED STEROIDS

Henry Laurent; Ulrich Kerb; Karl-Heinz Kolb; Rudolf Wiechert, and Erich Gerhards, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

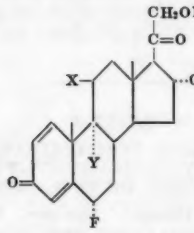
Division of Ser. No. 753,034, Aug. 15, 1968, Pat. No. 3,609,171. This application Aug. 20, 1971, Ser. No. 173,638

Claims priority, application Germany, Aug. 16, 1967, P 16 43 036.7

Int. Cl. A61k *17/00*

U.S. Cl. 424—242 31 Claims

Pharmaceutical composition containing as active ingredient an 11-halogen substituted steroid of the formula



wherein R is hydrogen, aliphatic acyl of up to 15 carbon atoms or aliphatic acyl having up to a total of 15 carbon atoms and being substituted with chlorine, or a carboxylic acid group, a nitryl group or a sulphate group and wherein X and Y are halogen, the molecular weight of Y being at least equal to that of X.

The compositions of the invention are useful particularly as anti-inflammatory agents.

The invention also embraces a method of treating patients suffering from inflammatory conditions with the defined compositions.

3,743,742

PRODUCING ANTI-FIBRINOLYTIC ACTIVITY WITH AMINOBICYCLOACETIC ACID DERIVATIVES

Larry J. Loeffler, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application June 17, 1969, Ser. No. 834,139, now Patent No. 3,641,129. Divided and this application June 25, 1972, Ser. No. 157,036

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 2 Claims

The compound 4-aminomethylbicyclo-[2.2.2]-octane-1-acetic acid and the pharmaceutically acceptable salts thereof are useful as anti-fibrinolytic compounds.

3,743,743

DITHIOCARBAMYLACETONEOXIME CARBAMATE ACARICIDES AND INSECTICIDES

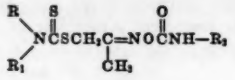
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Mar. 18, 1969, Ser. No. 808,342, now Patent No. 3,642,856. Divided and this application Sept. 3, 1971, Ser. No. 177,811

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 3 Claims

Dithiocarbamylacetoneoxime carbamates having the general formula



in which R and R_1 are independently methyl or ethyl, and R_2 is lower alkyl, preferably methyl. The compounds are useful as acaricides and insecticides.

3,743,744

MEANS FOR INHIBITING SCOURS IN PIGLETS BY ADMINISTERING A SOURCE OF CITRATE IONS

John P. O'Donovan, Trenton, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,462

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 8 Claims

Disclosed herein are compositions and methods useful for inhibiting scours in piglets under 22 days of age by providing them with about .35 to .75 gm. of citrate ion in their drinking water per day. Methionine is preferably co-administered with the citrate ion.

3,743,745

NITRO-TRIFLUOROMETHYL-BENZANILIDES FOR TREATING COCCIDIOSIS

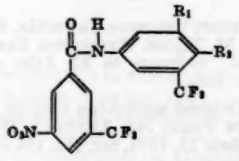
Dean Earl Welch and Robert Richard Baron, Charles City, Iowa, assignors to Salsbury Laboratories

No Drawing. Original application Nov. 18, 1968, Ser. No. 776,752, now Patent No. 3,689,556. Divided and this application May 18, 1972, Ser. No. 254,805

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 5 Claims

5-nitro-3,3'-trifluoromethylbenzamides of the general configuration



in which R_1 is H or CF_3 and R_2 is H or NO_2 and veterinary compositions for the treatment of avian coccidiosis containing the same. The compounds 4',5-dinitro-3,3'-

(bis)-trifluoromethylbenzanilide and 5-nitro-3,3',5'-(tris)-trifluoromethylbenzanilide are disclosed as illustrative examples.

3,743,746

PROCESS OF TREATING PEPTIC ULCER WITH A NON-ANTICHOLINERGIC AGENT

Kendrick W. Dungan, Evansville, Ind., and Paul M. Lish, Oakland, Calif., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed May 19, 1970, Ser. No. 38,879
Int. Cl. A61k *27/00*
U.S. Cl. 424—330 6 Claims

Administration of 1-(2-dimethylaminoethyl)-1-phenylindene or 1-[2-(methylamino)ethyl]-1-phenylindene to mammals having peptic ulcer produces an antiulcer effect therein. The aforementioned compounds employed in the process have little demonstrable anticholinergic activity and produce their antiulcer effect by a mechanism which is non-antichlolinergic in character.

3,743,747

OXO-DERIVATIVES OF LIMONENE AND DIPENTENE USED AS FUNGICIDES

Darrell D. Whitehurst, Titusville, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed June 14, 1971, Ser. No. 153,070
Int. Cl. A01m *9/24*
U.S. Cl. 424—333 3 Claims

Certain oxo-derivatives of limonene and dipentene form a new class of compounds exhibiting fungicidal activity. In standard fungicide tests, the compounds of this invention prove effective against *Fusarium oxysporium, Pythium debaryanum, Rhizoctonia solani* and *Sclerotium rolfsii.*

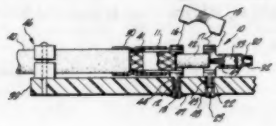
ELECTRICAL

3,743,748

DEVICE FOR TERMINATING A SHIELDED CABLE TO A PRINTED CIRCUIT BOARD AND METHOD OF CONNECTING A SHIELDED CABLE TO A PRINTED CIRCUIT BOARD UTILIZING THE SAME

Larry R. Reeder, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 2, 1972, Ser. No. 222,806
Int. Cl. H01r *17/18, 5/04*; **H05k** *3/34*
U.S. Cl. 174—75 C **10 Claims**



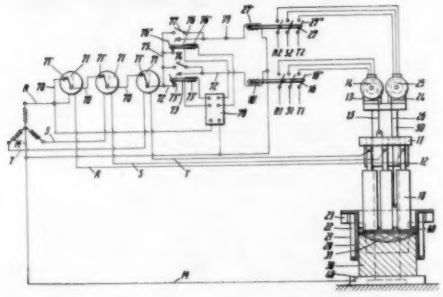
A terminating device is disclosed which is useful for electrically connecting a shielded cable to a printed circuit board or other conductive member. The device has a shaped, conductive clip having at its first end a first connector for connection to the shield of a coaxial cable. The other end of the clip has a connector for electrical connection to the center conductor of the coaxial cable. A leg protrudes downwardly near each end and the two ends are temporarily connected by a removable tab. Heat shrinkable sleeves with solder inserts may be advantageously attached to this clip to help secure the connections between the cable and the clip and to help prevent undesired electrical contact.

3,743,749

ELECTRIC SLAG REFINING PLANT

Ernst Fischer, Vienna, Austria, assignor to Gebr. Bohler & Co. AG, Vienna, Kapfenberg, Austria

Filed June 23, 1972, Ser. No. 265,638
Claims priority, application Germany, Sept. 17, 1971, P 21 46 551.0
Int. Cl. H05b *7/00, 3/60*
U.S. Cl. 13—9 **11 Claims**



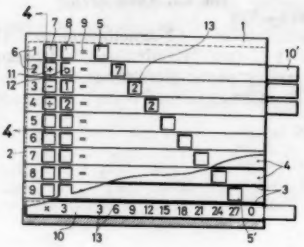
The plant comprises an ingot mold, a plurality of fusible electrodes and a plurality of electrical supply conductors connected to respective ones of said electrodes and incorporating each a contact ammeter having a contact, which is arranged to operate when the current in the associated conductor is below a predetermined minimum. Said contacts are connected in series. An electrode holder carries said fusible electrodes and is movable to feed said electrodes into said mold. Electrically operable feed drive means are connected in series with said contacts and arranged to move said electrode toward said mold when all said contacts are in an operating condition.

3,743,750

TOY CALCULATOR FOR EDUCATION

Motoi Hurue, 92 Aza-Nakamura, Ama-gun Aichi-ken, Japan

Filed Sept. 12, 1972, Ser. No. 288,408
Claims priority, application Japan, Oct. 2, 1971, 46/77240
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 D **2 Claims**



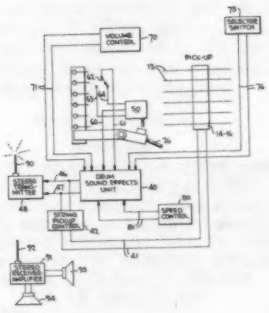
A toy calculator comprises a flat case member with its interior space divided into parallel channels and calculating bars having a form insertable into said channels. Some of numerals and symbols constituting an arithmetic equation are drawn on the calculating bar and the others and an answer numeral are drawn on the wall of the channel. Windows are bored through the wall at least for seeing the numerals drawn on the calculating bar.

3,743,751

COMBINED MUSICAL INSTRUMENT AND DRUM SOUND EFFECTS UNIT

Renato L. Ibanez, 1508 S. George Mason Drive, Arlington, Va.

Filed Jan. 28, 1971, Ser. No. 110,484
Int. Cl. G10h *3/00, 5/00*
U.S. Cl. 84—1.16 **10 Claims**



A drum sound effects unit is combined with a stringed musical instrument to produce drum accompaniment to add a definite, rigid beat and depth to the music being played. The musical instrument has a body and elongated neck portion with a plurality of strings extending along the same. The drum sound effects unit is an electronic device that produces sounds at a selected tempo independent of the instrument and to be followed by the playing of the instrument. The sound unit is compact and enclosed in the instrument thereby making said instrument self contained. The on-off switch is also carried by the instrument and is operative in response to a control lever of a tremulant unit, said lever extending over at least some of the strings in one position and spaced away from the strings in

another position. A reversing switch is provided to select the desired on and off position. A self-contained stereo transmitter may be provided in the instrument for processing the sound signals to be reproduced in stereo. Additional controls for the drum sound effects unit are provided in spaced relationship for volume, style and tempo; the volume being variable by the inside of the forearm of the player.

3,743,752

METHOD OF SUPPRESSING HOT SPOT IN ARC FURNACE AND APPARATUS THEREFOR

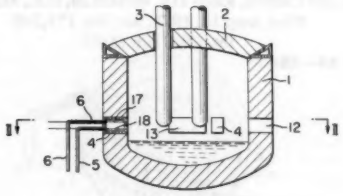
Haruyoshi Furuhashi, Nakamura-ku, Nagoya-shi, Aichi-ken, Japan, assignor to Daido Steel Co., Ltd., Minami-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 27, 1972, Ser. No. 221,278

Claims priority, application Japan, Feb. 2, 1971, 46/3590

Int. Cl. H05b *7/12*

U.S. Cl. 13—12 **7 Claims**



A method of suppressing hot spots in an electric arc furnace — particularly an electric arc furnace for use in steel making — and an apparatus pertaining thereto, in which one or more water cooled boxes are provided in the furnace wall. The temperature of the inner wall of the box or of the cooling water is sensed. The power supply to the electrode or electrodes is adjusted in response to the sensed temperature.

3,743,753

ELECTRICAL CEILING HEATING IN TUNNEL KILNS

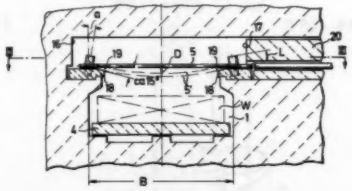
Fritz Petzi, Michelfelder Str. 9, and Helmut Baumann, Fuchtbauer Str. 5, both of 8500 Nurnberg, Germany

Filed Dec. 27, 1971, Ser. No. 212,406

Claims priority, application Germany, Nov. 10, 1971, P 21 55 838.3

Int. Cl. H05b *3/06*

U.S. Cl. 13—25 **4 Claims**



An electrical heating device in a tunnel kiln comprises a plurality of U- or double U- shaped heating elements disposed transversely across the top of the tunnel. The elements are only supported at each end by pipe like members of aluminiferous material about which the bends of the elements are looped. The pipe like elements are inclined inwardly towards the center of the tunnel at an angle of 10° to the vertical.

3,743,754

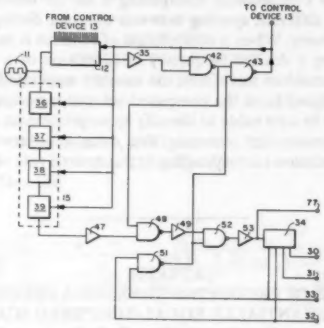
LORAN SIGNAL SYNTHESIZER

Robert M. Eisenberg, Derwood, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Sept. 1, 1971, Ser. No. 176,802

Int. Cl. G09b *9/02*

U.S. Cl. 35—10.2 **9 Claims**



This specification describes a Loran simulator for simulating both type A and type C Loran signals. A pulse generator for generating Loran C pulse trains is driven from a counter. The counter has timing pulses supplied to it from a clock. The output of the counter, when a prescribed count is reached, triggers the generation of the Loran C pulses. In addition, the Loran A pulse generator is triggered by an output of the Loran C generator. Separate output terminals are provided for each type of Loran pulse trains. A control device supplies the counter at the beginning of each cycle with a number whose value determines the time interval until the generation of the next pulse train. The control device may be manually operable or automatically operated. Radio frequency phasing effects are also generated.

ERRATA

For Classes 35—31 and 84—1 see:
Patents Nos. 3,743,750 and 3,743,751

3,743,755

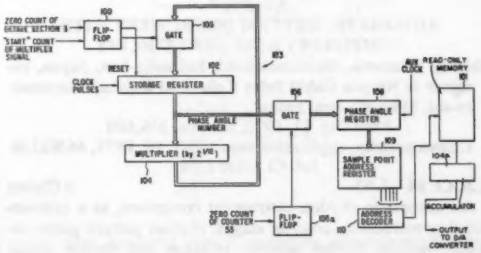
METHOD AND APPARATUS FOR ADDRESSING A MEMORY AT SELECTIVELY CONTROLLED RATES

George A. Watson, Tustin, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 875,178, Nov. 10, 1969, Pat. No. 3,639,913. This application Aug. 11, 1971, Ser. No. 170,992

Int. Cl. G10h *5/00*

U.S. Cl. 84—1.01 **6 Claims**



A memory contains digital data of related informational content in a plurality of discrete locations identified by respec-

tive addresses. The memory is addressed, or accessed, at a rate which depends upon the desired spacing between data from the various locations as it is sequentially read from the memory. In a specific embodiment, the data constitutes amplitude values of a complex waveform of the type produced by a musical instrument, at equally spaced points in time along an axis of the waveform. Apparatus for addressing the memory at any of a plurality of selectively controlled rates includes a calculator for continuously computing a set of numbers each defining a different spacing between the data during readout of the memory. When a desired rate of readout is selected, as by selecting a desired frequency of repetition of a complete cycle of the stored waveform, the number associated with that rate is sampled from the computed set and is periodically increased by its own value to identify appropriate data addresses in the memory, for accessing that data, at intervals of the periodic increase corresponding to the desired rate of readout.

3,743,756

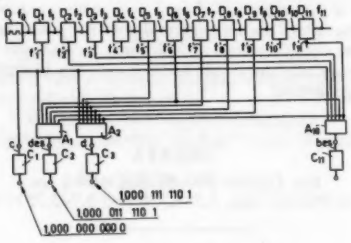
METHOD OF PRODUCING TONES OF A PREFERABLY SUBSTANTIALLY EQUAL-TEMPERED SCALE

Nico Valentinus Franssen; Willem Ruiterkamp, and Conrelis Johannes Van der Peet, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 797,914, Feb. 10, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,387

Int. Cl. G10h *5/00*

U.S. Cl. 84—1.01 **14 Claims**



A device for producing the tones of a musical scale from a single tone generator using a series-connected group of digital dividers for successively dividing the generated tone by 2^n. The output pulses of selected dividers are combined in logic circuits to form the individual frequencies of the musical scale.

3,743,757

AUTOMATIC RHYTHM INSTRUMENT WITH TEMPORARY ROLL BEAT CIRCUIT

Shimaji Okamoto, Hamamatsu-shi, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

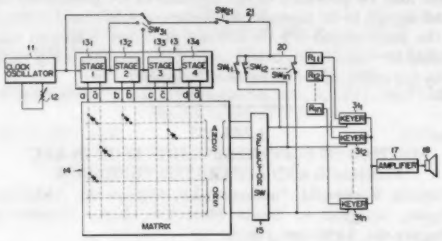
Filed Oct. 11, 1972, Ser. No. 296,600

Claims priority, application Japan, Oct. 18, 1971, 46/82356

Int. Cl. G10f *1/00*

U.S. Cl. 84—1.03 **4 Claims**

An automatic rhythm instrument comprises, as a conventional construction, counter stages, rhythm pattern pulse encoding matrix, rhythm selector switches and rhythm sound sources; and as an additional construction, a temporary roll beat circuit including switches directly connecting between the counter stages and the rhythm sound sources. The instrument enables the various rhythm sound sources to be triggered not only by various sets of previously determined ordinary rhythm pattern pulses, but also by any of a plurality of repetitive pulse trains each having a predetermined frequency or time width which are used as temporary roll beat performance.



3,743,758

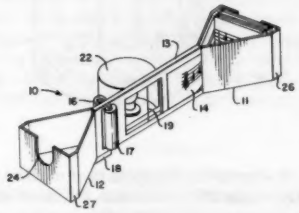
OPTICAL METRONOME

Juan M. Del Castillo, Risco 119, Mexico 20, D.F., Mexico

Filed Aug. 12, 1971, Ser. No. 171,249

Int. Cl. G10b *15/00*

U.S. Cl. 84—484 **4 Claims**



An optical metronome using a strip with musical staff thereon folded in zig-zag form moved past a lamp in accordance with the speed of the musical tempo. The notes therefor are viewed through a channel window as the strip moves from one triangularly shaped depository to another.

ERRATUM

For Class 174—75 see:
Patent No. 3,743,748

3,743,759

CRYOSTATIC CONTAINER

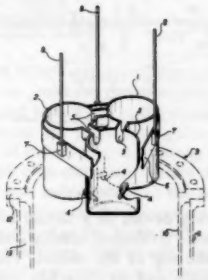
Pierre Genevey, 58a rue Pierre Brossolette, Chatillon-sous-Bagneux, France

Filed June 8, 1972, Ser. No. 260,990

Claims priority, application France, June 9, 1971, 7120855

Int. Cl. H01v *11/00*

U.S. Cl. 174—15 R **7 Claims**



The container is intended for devices having a plurality of elements for low-temperature operation such as supercon-

ducting circuits comprising a coil, a flux pump, a switch and the like. The container comprises a set of separate cups in adjacent relation and each containing one element of the superconducting circuit, the cups are interconnected at the top by means of open channels providing passageways for the electric lead-wires between the elements and the set of cups is directly suspended within a double-walled outer enclosure.

3,743,760

DUCT SYSTEM FOR LOW-TEMPERATURE FLUIDS AND THERMALLY ISOLATED ELECTRICAL CONDUCTORS

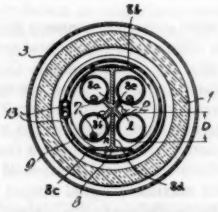
Wolfgang Sassin, Julich, Germany, assignor to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Germany

Division of Ser. No. 34,082, May 4, 1970, Pat. No. 3,693,648. This application May 21, 1971, Ser. No. 145,885

Claims priority, application Germany, May 2, 1969, P 19 22 487.4

Int. Cl. H01v 11/00

U.S. Cl. 174—15 C **4 Claims**



A duct system for low-temperature fluids, especially low-boiling-point gases such as helium, and for thermally isolated electrical conductors wherein an evacuated outer rigid conduit surrounds the fluid-carrying duct which consists of a foil flexible and nonsupporting at room temperature but reinforced by a helical strip. The foil preferably consists of polyethyleneterephthalate.

3,743,761

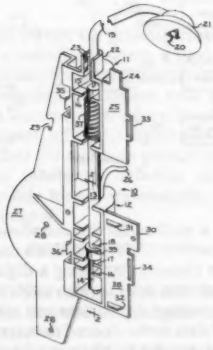
HIGH VOLTAGE RECTIFIER HOLDER

Richard J. Halstead, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Aug. 10, 1971, Ser. No. 170,579

Int. Cl. H05k 5/02; H01l 1/02

U.S. Cl. 174—52 R **11 Claims**



A holder including a pair of housings for receiving the ends of a high voltage solid-state rectifier, leaving the intermediate section of the rectifier exposed for cooling. Each end of the rectifier is received by a terminal which is slidingly mounted within a housing. Spring means are provided to bias the terminals into contact with the ends of the rectifier. A conductor associated with one terminal is directed along a portion of the body of the rectifier to distribute the voltage gradient therein, and strain relief means are provided to prevent the output conductor from being pulled loose. Each of the housings is provided with a latching cover or door to facilitate the installation and withdrawal of the solid-state rectifier.

3,743,762

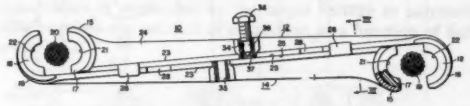
CONDUCTOR SPACER

Nick S. Annas, and Charles R. Russ, both of Marshall, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 24, 1972, Ser. No. 220,044

Int. Cl. H02g 7/12

U.S. Cl. 174—146 **5 Claims**



A spacer for spacing parallel conductors comprising bar members having one-half of a conductor clamp at each end thereof. The clamp halves at each end of the bar members comprise one clamp half facing outwardly therefrom and one clamp half facing inwardly toward the bar members. The bar members face each other along planar surfaces that extend between the clamp halves. The clamp halves are adapted to clamp a conductor at each of the bar members when the planar surfaces are disposed in face-to-face relationship and the clamp halves of one bar member oppose those of the other. A fastening means is employed to secure and maintain the clamp halves on the conductors when the bar members are disposed in mutual engagement along their planar surfaces.

3,743,763

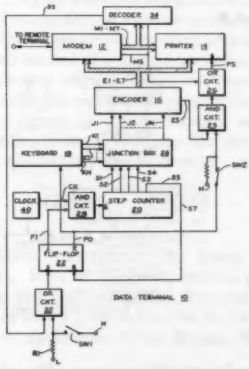
DATA TERMINAL WITH AUTOMATIC RESPONSE FEATURE

Allen G. Jacobson, Ramsey, N.J., and Maurice J. Epstein, Ardsley, N.Y., assignors to Computer Transceiver Systems, Inc., Paramus, N.J.

Filed June 4, 1971, Ser. No. 150,009

Int. Cl. H04l 11/04

U.S. Cl. 178—4.1 B **10 Claims**

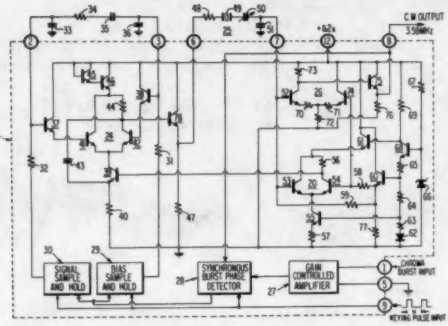


A data terminal which transmits binary-coded indicia representing characters in response to the operation of keys of a keyboard is provided with means different from the keyboard for automatically transmitting the representations of a particular plurality of characters in response to a remote inquiry.

3,743,764
ELECTRONIC PHASE SHIFTING APPARATUS

Erwin Johann Wittmann, North Plainfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 18, 1972, Ser. No. 254,636
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 HE 11 Claims



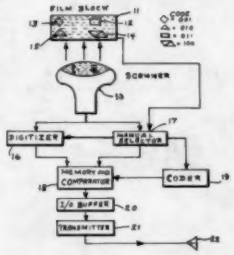
An electronic phase shift circuit suitable for construction in integrated circuit form as a tint control or as an automatic frequency and phase control for a color oscillator, or the like.

In the phase shift circuit, input signals are coupled via two signal paths to a signal adding or summing circuit. Predetermined but different phase shifts are provided in the two signal paths. Additionally, one signal path includes a differential control circuit responsive to applied control signals for varying the amplitude of signals coupled through that path. The resultant phase of the sum of the signals with respect to the phase of the input signals is variable according to the magnitude of applied control signals.

3,743,765
REDUNDANT AREA CODING SYSTEM

James J. Maier, Utica, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 26, 1971, Ser. No. 147,094
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 1 Claim

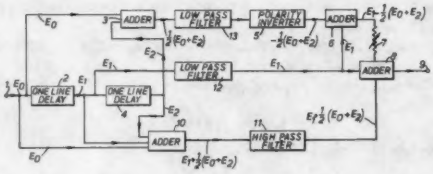


An apparatus for selecting areas of a film which are of no interest to a user, coding these unimportant areas for identification purposes and selecting the important areas to be translated into useable information. The important information and a code for the unimportant information is transmitted to a user facility, thereby decreasing the information transmitted to the user and conserving the bandwidth required for transmission.

3,743,766
COLOUR TELEVISION CAMERA EQUIPMENTS

Peter William Loose, Chelmsford, Essex, and Richard Arthur Sharman, West Hanningfield, Essex, both of England, assignors to The Marconi Company Limited, London, England

Filed Aug. 20, 1971, Ser. No. 173,386
Claims priority, application Great Britain, Aug. 29, 1970, 41,666/70
Int. Cl. H04n 5/14
U.S. Cl. 178—5.4 11 Claims

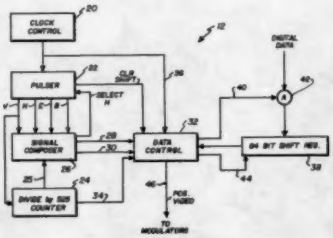


A colour television camera equipment having vertical aperture correction in which both the vertical and horizontal components of the video signal are combed. Complementary low and high pass filters are used in the vertical and horizontal combing paths respectively. Thus vertical combing is performed to provide maximum signal output at odd multiples of half the line frequency below the highest frequency useful for vertical video information, and horizontal combing is performed to provide maximum signal output at integral multiples of the line frequency above the highest frequency useful for vertical video information.

3,743,767
TRANSMITTER AND RECEIVER FOR THE TRANSMISSION OF DIGITAL DATA OVER STANDARD TELEVISION CHANNELS

Donald L. Bitzer, Urbana; Michael Johnson, Paxton, and Jack Stifle, Champaign, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 4, 1971, Ser. No. 186,020
Int. Cl. H04n 7/00
U.S. Cl. 178—5.6 8 Claims

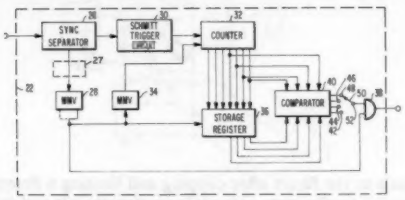


Apparatus and a method for the economical distribution of digital data to a number of data terminals using standard commercial television channels including a digital transmitter for transmitting digital data over a video cable and a receiver for receiving the transmitted digital data and selectively distributing the recovered data to the desired data terminals. A method for sending digital data bit by bit over television channels in a field by field manner to a plurality of terminals in a manner such as to greatly simplify the detection of any errors and offering an advantage of decreasing the probability of errors as more data terminals are added to the system.

3,743,768
METHOD AND APPARATUS FOR ELECTRONICALLY MONITORING A FIELD OF VIEW

George V. Copland, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 2, 1971, Ser. No. 130,643
Int. Cl. H04n 5/14, 7/18
U.S. Cl. 178—6.8 16 Claims

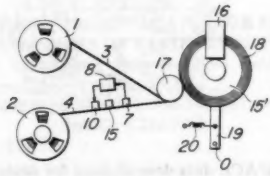


A method and apparatus for electronically monitoring a field of view and manifesting significant optical changes occurring therein to detect unauthorized intrusion into an area defined by the field of view. The number of times that the amplitude of successive electronic signatures of the field of view exceeds a predetermined threshold is counted for two different electronic signatures. The two numbers counted are compared and if the numerical difference therebetween exceeds a selected number, an alarm indication is provided.

3,743,769
MAGNETIC TAPE PRINTER

Osahiko Yano, Kadoma-shi, and Kukashi Kobayashi, Hirakata-shi, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 26, 1971, Ser. No. 109,921
Claims priority, application Japan, Feb. 6, 1970, 45/10833
Int. Cl. G11b 5/86, 21/00; H04n 5/78
U.S. Cl. 178—6.6 A 6 Claims



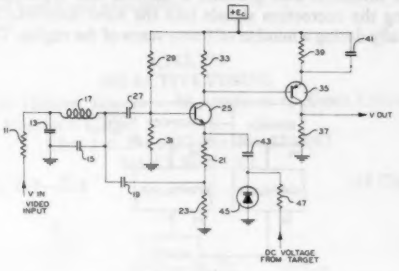
A magnetic tape printer for printing the magnetic information recorded in a master tape onto a slave tape by bringing both tapes into contact with the respective magnetic layers facing and then imposing a magnetic field or heat on the registered tapes, the said magnetic information including, for example, a video signal, an audio signal and a control signal; characterized in that the said tape printer includes means for compensating the inherently deficient printing effect for signals of comparably longer wavelengths such as an audio signal or a control signal.

3,743,770
AUTOMATIC APERTURE CORRECTOR

Nikola V. Vidovic, Auburn, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,015
Int. Cl. H04n 5/14
U.S. Cl. 178—7.1 5 Claims

An automatic aperture correction circuit for a television camera using two transistors with matched RC time constant networks to provide for high frequency gain with little or no phase shift and also including a varicap diode whose

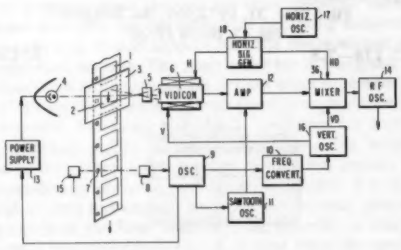


capacitance is controlled by the target voltage to automatically regulate the amount of correction as a function of light level.

3,743,771
TELEVISION REPRODUCER FOR A MOVIE FILM

Takahiro Ohta, and Masahiro Ohnishi, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 28, 1971, Ser. No. 166,880
Claims priority, application Japan, July 28, 1970, 45/65859
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 4 Claims



A television reproducer for a movie film (cine film) which has a device for flashing in synchronism with a detected frame signal. The frame signal indicates the position of a frame of a continuously fed movie film. A vidicon device scans vertically a plurality of fields within a flash duration with a scan frequency of 60 fields per second of a standard television system. The scanning frequency is obtained from the frame signal. The reproducer also includes a circuit for varying the amplification degree of video signals in synchronization with the frame signal for preventing flickers. Thus, the film may be projected to the television without any special devices.

3,743,772
IMAGE ANALYSING

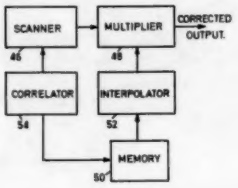
Leon Andre Pieters, Cambridge, and James Frank Wren, Wrestlingworth, both of England, assignors to Meldreth Electronics Limited, Cambridgeshire, England

Filed Nov. 12, 1970, Ser. No. 88,543
Claims priority, application Great Britain, Nov. 12, 1969, 55,269/69
Int. Cl. H04n 5/14
U.S. Cl. 178—7.2 22 Claims

The invention provides a method and apparatus for correcting shading distortion in a source of scanned video signal. A multiple location store is provided for storing a signal indicative of the shading correction required at each of a number of selected, spaced apart points in the scannable region of the

source and signal interpolation means is provided for interpolating between the stores values of correction in both line and frame scan directions for other points in the region.

The invention also provides a method and apparatus for loading the correction signals into the store locations automatically during a number of frame scans of the region. This is



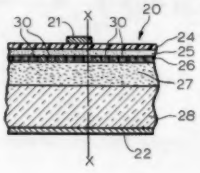
achieved by correcting the video signal at each point by a known amount, comparing the corrected signal with a reference signal and storing a signal indicative of this amount of correction if the comparison indicates that the correction has improved the shading of the video signal. The final correction signal stored at each store location is derived by a method of successive approximations.

3,743,773

IMAGE DISPLAY PANEL

Alan Sobel, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 31, 1972, Ser. No. 240,060
Int. Cl. H05b *3/26*
U.S. Cl. 178—7.3 **22 Claims**



A panel displays an image formed of picture elements distributed in a matrix. At each picture element position is a light-display device such as an electroluminescent cell. A group of mutually-dispersed switches are located at each of the display devices with each switch within a group being responsive to a certain field strength for energizing its associated display device. Video signal is supplied together with position-selection signals. Different ones of the groups of switches are selectively addressed in response to the position-selection signals. Finally, in response to the video signal, each addressed group of the switches is subjected to a field correspondingly dispersed among the switches in an amount proportional to the picture level.

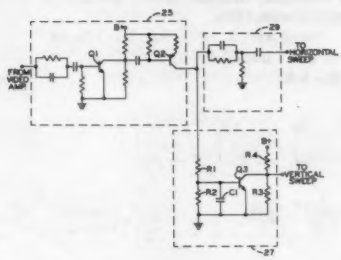
3,743,774

SYNCHRONIZING SIGNAL SEPARATION CIRCUIT

Jack R. Chipman, and Joseph E. Morrow, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed July 12, 1971, Ser. No. 161,452
Int. Cl. H04n *5/10*
U.S. Cl. 178—7.3 S **5 Claims**

A television receiver synchronizing signal separating circuit is disclosed having an improved active low pass filter for passing only vertical synchronizing signals, a passive high pass filter for passing horizontal synchronizing signals, and an amplifier which supplies both vertical and horizontal synchroniz-



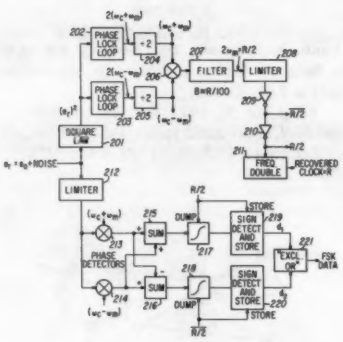
ing signals to the filters after clipping and limiting a detected video signal to eliminate video information signals and noise respectively.

3,743,775

DATA DEMODULATOR APPARATUS

William M. Hutchinson, Corona Del Mar, and Richard W. Middlestead, El Toro, both of Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 12, 1972, Ser. No. 217,122
Int. Cl. H04l *7/02, 27/16;* **H03d** *3/00*
U.S. Cl. 178—88 **8 Claims**



A MARK/SPACE data demodulator for detecting frequency shift keyed MARK/SPACE incoming signals wherein the reference frequency is obtained at the receiver by detecting the difference in frequency between the MARK and the SPACE frequency signals and utilizing this frequency difference in the data detection process.

3,743,776

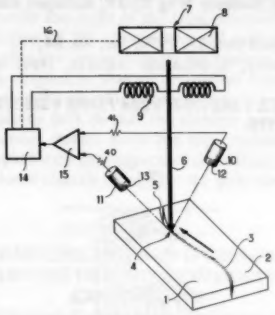
DEVICE FOR TRACING SEAMS FOR WELDING BY ELECTRON BOMBARDMENT

Francois Corcelle, 70 bis rue du Docteur Oge, Montlhery; Jean Angely, 153 bis Avenue de la Republique, Villejuif, and Jean-Pierre Delort, 21 rue de la Condamine, Paris, all of France

Filed May 5, 1971, Ser. No. 140,399
Claims priority, application France, May 5, 1970, 7016360
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **6 Claims**

This invention concerns electron bombardment welding techniques. The invention teaches a method and a device for keeping a welding beam centered on a seam plane. The detector includes two detectors arranged symetrically with respect to a seam plane. They furnish a signal whose amplitude in-

creases as the electronic beam spot moves away from the seam plane center and approaches the edge of one of the pieces



being joined. A servo-system, without oscillation, brings the beam back into the axis of the seam plane. The device can be used in welding big pieces.

3,743,777

PROCESS FOR HARDENING COATINGS WITH LASERS EMITTING INFRA-RED RADIATION

Hans-Dieter Hanus, and Franz Aussenegg, both of Graz, Austria, assignors to Vianova-Kunstharz, A.G., Vienna, Austria

Filed July 10, 1970, Ser. No. 53,976

Claims priority, application Austria, July 17, 1969, A 6914/69; Apr. 14, 1970, A 3387/70

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 LM **8 Claims**

This invention is directed to a process for hardening or curing conventional protective coatings applied to a suitable substrate utilizing lasers emitting infra-red radiation with a wave length of from 1–100μ and preferably 3–25μ. The coatings are hardened within a few minutes of treatment without discoloration normally associated with short curing durations.

3,743,778

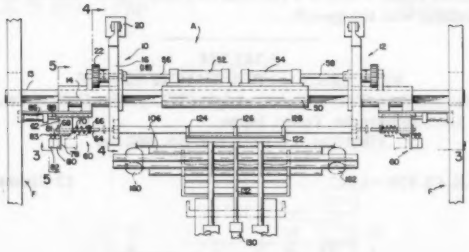
RESISTANCE HEATING APPARATUS FOR ELONGATED WORKPIECES OF VARIED LENGTHS

Paul L. Day, Middleburg Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Sept. 20, 1971, Ser. No. 181,880

Int. Cl. C21d *9/62*

U.S. Cl. 219—156 **12 Claims**



An apparatus for resistance heating elongated workpieces having random lengths varying between defined limits wherein during heating a single workpiece is transversely gripped between two spaced apart pairs of resistance heating contacts. The apparatus includes means for selectively moving each pair of contacts transversely toward and away from each other to provide for efficient heating of workpieces having various random lengths. Associated with each pair of contacts are means for automatically determining the proper amount of transverse movement for each workpiece to be heated and means for permitting the pairs of contacts to move further transversely away from each other during heating to compensate for longitudinal workpiece expansion.

3,743,779

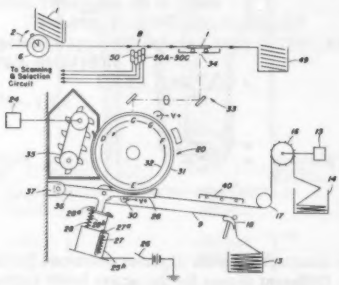
SELECTIVE FUSING

Mark A. Hutner, Glenview, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1972, Ser. No. 221,193

Int. Cl. B60i *1/02*

U.S. Cl. 219—216 **15 Claims**



Fuser regulating methods and the apparatus therefor are provided in accordance with the teachings of the present invention wherein a fuser assembly is selectively energized in accordance with the intermittent movement of successive portions of a support base through the fuser assembly such that said fuser assembly rapidly attains an operating temperature sufficient to fuse to said support base the electroscopic particles supported thereon. The fuser assembly is energized for a pre-established minimum period of time when successive portions of the support base are moved therethrough within a first time duration. The fuser assembly is energized for a second pre-established period of time greater than the minimum period of time when a first interval of time has expired since the immediately preceding energization thereof. If a second interval of time has expired since the immediately preceding energization of the fuser assembly, the assembly is energized for a third pre-established period of time when the next successive portion of the support base is advanced thereto. The second interval of time is greater than the first interval of time and the third pre-established period of time is greater than the second pre-established period of time. Further periods of energization may be established in accordance with the amount of time that has expired since an immediately preceding energization.

3,743,780

BOILING CHAMBER FOR STEAM GENERATOR

Nat Camp, 395 Westchester Avenue, Port Chester, N.Y.

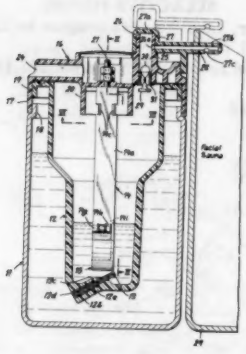
Filed May 1, 1972, Ser. No. 249,189

Int. Cl. H05b *3/60*; **F22b** *1/30*

U.S. Cl. 219—288 **15 Claims**

A boiling chamber in the form of a generally cylindrical upright container, communicating at its bottom with a water tank through a restricted inlet, has a pair of vertical electrodes suspended from its top which is formed as a detachable lid. A central mounting ring on that lid has two diametrically opposite segmental cutouts engaged by respective pairs of locator rigs on the electrode shanks which terminate in transverse tabs screwed onto the lid within the ring. A nozzle assembly on the lid includes a fixed sleeve, in line with a vertical outlet aperture adjacent the outer periphery of the mounting ring, and a movable sleeve coaxially engaging the latter; the movable sleeve may carry a laterally projecting discharge tube, serving to extend the nozzle to an adjacent vessel such as a fa-

cial sauna, or may be provided with two or more ports of different diameters selectively alignable with an orifice of the fixed sleeve to establish passages of different widths for the escaping steam. The entrance end of the vertical outlet aperture is partly obstructed by a splash shield loosely seated



therein to intercept droplets of water entrained by the evolving steam. Different shapes for the active lower extremities of the electrodes are described; in one embodiment, they include a generally J-shaped vertical extremity and a generally U-shaped horizontal extremity spacedly nested in the former.

3,743,781

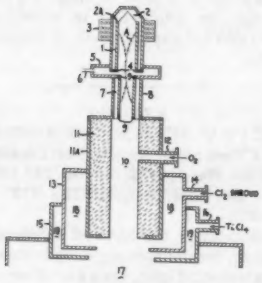
METHOD FOR INCREASING LIFE OF PLASMA ARC ELECTRODES

Calvin B. Holden, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 683,839, Nov. 17, 1967, Pat. No. 3,558,274, which is a continuation-in-part of Ser. No. 400,644, Oct. 1, 1964, abandoned. This application May 6, 1970, Ser. No. 35,004

Int. Cl. H05b *7/18*

U.S. Cl. 219—383 **4 Claims**



Operating life of electrodes used in electric arc heaters is increased by utilizing electrodes having less than 0.0005 volume percent voids of at least 0.019 inch in any dimension in the area contacted by the arc. Ultrasonic testing is used to determine the acceptability of the electrodes for the uses described, e.g., heating corrosive gases, such as oxygen. Use of such electrodes in a process for producing pigmentary metal oxides is also described.

3,743,782

STORAGE CONTAINER FOR NIGHT STORAGE AIR HEATER

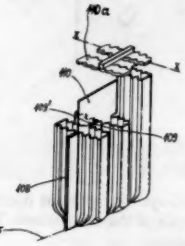
Nikolaus Laing, Hofener Weg 33-37, Aldingen near Stuttgart, Germany

Filed Oct. 28, 1970, Ser. No. 84,732

Claims priority, application Austria, Nov. 4, 1969, A 10.335/69

Int. Cl. F24h *7/02*; **F28d** *13/00*; **F28f** *3/04*

U.S. Cl. 219—378 **14 Claims**



Storage container for electric heaters storing heat in form of crystallization energy and comprising panels which have prismatically shaped bulges arranged parallel to air channels and being disposed opposite each other in such way that cavities are formed for receiving the storage mass.

3,743,783

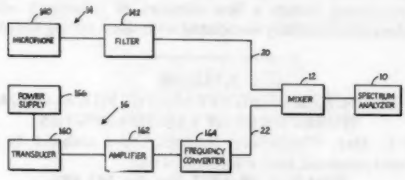
APPARATUS FOR SIMULTANEOUSLY RECORDING SPEECH SPECTRA AND PHYSIOLOGICAL DATA

Joseph G. Agnello, 12122 Audie Court, Cincinnati, Ohio

Filed Feb. 22, 1971, Ser. No. 117,331

Int. Cl. G10l *1/12*

U.S. Cl. 179—1 VS **4 Claims**



A spectrum analyzer having an input, a mixer for feeding the input with a filtered speech signal and a frequency converted signal which is a function of physiological activity associated with the speech.

3,743,784

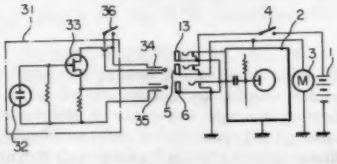
ELECTRICAL ATTACHMENT DEVICE

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Shibuya-ku, Tokyo, Japan

Filed Nov. 19, 1971, Ser. No. 200,366

Int. Cl. H01r *3/00*

U.S. Cl. 179—1 PC **12 Claims**



Electrical attachment device such as a speaker device and a microphone device requiring an electric power for use with a

tape recorder having an earphone jack, a remote switch jack and a microphone jack for extension connection of the electrical attachment device. The electrical attachment device has plugs mating with the jacks of the tape recorder, the polarity of the connection of the center terminal and the shield terminal of the plug for connection to the remote switch jack is reversed with respect to that of the center terminal and the shield terminal of the plug for connection to the earphone jack or the microphone jack so that the electric power is supplied to the attachment device from the tape recorder when the plugs are coupled with the respective jacks thereby dispensing with an additional electric source for the attachment device.

3,743,785

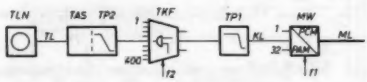
TELECOMMUNICATION SWITCHING SYSTEM EMPLOYING TIME DIVISION MULTIPLEX CONNECTIONS

Karl Maier, Stuttgart-Zuffenhausen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 10,576, Feb. 11, 1970. This application Feb. 14, 1972, Ser. No. 226,252

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 BM **6 Claims**



In a TDM-exchange involving space-division to time-division conversion lowpass filters associated with the space division transmission channels, as well as the subscriber line circuits, are connected via a time-division multiplex-operated switching grid via which the connections are through-connected at a scanning frequency which is higher than the scanning frequency on a modulation converter. This considerably reduces the expenditure for filters.

3,743,786

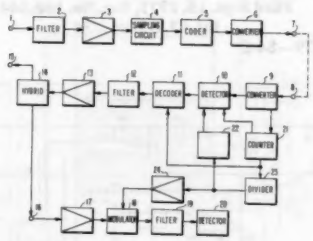
SIGNAL LEVEL SUPERVISING SYSTEM FOR A PULSE CODE MODULATION COMMUNICATING SYSTEM

Ken-Ichi Hiratsuka, Setogaya-ku, Tokyo; Daizo Kawakami, Funaboshi-shi; Haruo Kaneko, Minomitama-gun, Tokyo, and Tsuyoshi Takahashi, Kawasaki-shi, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo-to and Nippon Electric Company Limited, Tokyo, Japan, part interest to each

Filed Oct. 13, 1971, Ser. No. 189,010

Int. Cl. H04j *1/04*

U.S. Cl. 179—15 BP **10 Claims**



A signal level supervising system for a pulse code modulation communication system transmitting pulse code modulation signals representing frequency division multiplex signals containing a pilot signal, the pilot signal being used for signal level supervision purposes. Pilot signal recovery is provided by modulating the decoded frequency division multiplex signal with a carrier, derived from a pulse source used in the control of the pulse code modulation system, to frequency shift the decoded frequency division multiplex signal in a direction to increase the signal bandwidth ratio. The pilot signal is extracted from this frequency shifted signal.

3,743,787

SPEECH SIGNAL TRANSMISSION SYSTEMS UTILIZING A NON-LINEAR CIRCUIT IN THE BASE BAND CHANNEL

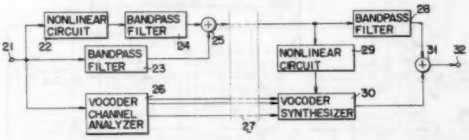
Hiroya Fujisaki, 3-31-12, Ebisu, Shibuya-ku, Tokyo; Shigeo Nagashima, 1-18-21, Yamato-cho, Nagano-ku, Tokyo; Masahiro Iwasaki, 717-26, Baba-cho, Tsurumi-ku, Yokohama, and Nobuyuki Goto, 1100-9, Shimoda-cho, Kohoku-ku, Yokohama, all of Japan

Filed Aug. 31, 1970, Ser. No. 68,237

Claims priority, application Japan, Sept. 2, 1969, 44/69196; Sept. 2, 1969, 44/69197

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SA **2 Claims**



In a speech signal transmission system there are provided means including a non-linear circuit and a bandpass filter to produce from a speech signal a base band signal representing the spectral fine structures of the speech signal and to transmit the base band signal to the receiving side, a vocoder channel analyzer to convert the speech signal into a second signal representing the spectral envelope of the original speech signal, a second non-linear circuit on the receiving side to convert the base band signal into an exciting signal and a vocoder synthesizer which acts to synthesize the original speech signal from the exciting signal and the second signal.

3,743,788

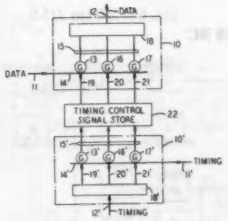
TIME CODED SIGNALLING TECHNIQUE FOR WRITING CONTROL MEMORIES OF TIME SLOT INTERCHANGERS AND THE LIKE

Roy Stephen Krupp, Rumson, and Lawrence Andrew Tomko, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1971, Ser. No. 204,142

Int. Cl. H04j *3/08*

U.S. Cl. 179—15 AQ **14 Claims**



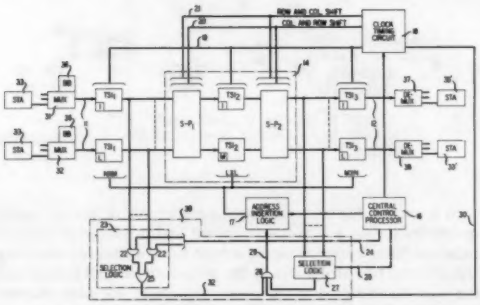
A first set of time division multiplex signal communication equipment has plural output gates distributed along the length of a signal propagation path thereof to be actuated selectively in different predetermined time slots. A different control memory shift register of corresponding length is provided for

each gate to store a control signal pattern that determines when such gate is to operate. A memory signal pattern is altered by an analogous set of signal communication equipment. Plural timing signals, which are representative of a predetermined time of operation of a gate of the first equipment set, are applied to different paths in the analogous equipment set, and those signals interact to produce an output from the analogous equipment for automatically writing a signal pattern in the correct control memory register in the correct time slot for operating the corresponding gate in the first set of equipment.

3,743,789
BUSY BIT FOR TIME DIVISION MULTIPLEX SIGNALS TO REDUCE SIGNAL PROCESSING TIME

Roy Stephen Krupp, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1971, Ser. No. 212,348
Int. Cl. H04j 3/12
U.S. Cl. 179—15 BY 20 Claims

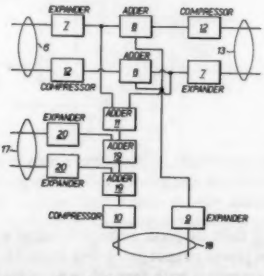


A predetermined bit location in each time slot word of a time division multiplex signal is reserved for including a signal bit which indicates by its signal state whether or not that particular word is in use for a call connection within the time division multiplex signal communication system. Busy bits on signal paths which are to be interconnected through a network are matched to identify a common available time slot on the paths. Busy bit signal states interact with switching equipment control memory signal states for holding up and taking down call connections.

3,743,790
TEE CONNECTION CIRCUIT FOR PCM TELEPHONE TRANSMISSION SYSTEMS

Royston William Hilsley, Great Baddow, Essex, England, assignor to The Marconi Company Limited, London, England

Filed May 28, 1971, Ser. No. 147,731
Claims priority, application Great Britain, June 4, 1970, 26,932/70
Int. Cl. H04m 3/56
U.S. Cl. 179—18 BC 3 Claims

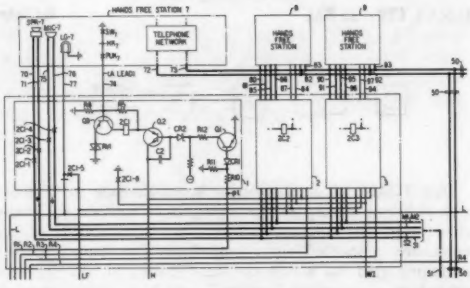


A pulse code modulated telephony transmission arrangement provides a facility which enables an operator to "tee" across an established connection between two subscribers without breaking the connection and without reducing the quality and audibility of the connection. The telephony transmission data from the subscribers and operator is of nonlinearly coded digital form and each is independently converted to linear coded digital signals which are then additionally mixed as required and thereafter converted back to the original nonlinearly coded digital form to permit the operator to speak to the subscribers, or to monitor the conversation. The digital mixing ensures both that no clicks will be heard by the subscribers, and that no reduction of signal level is produced when a "tee" connection is made.

3,743,791
CONTROL ARRANGEMENT FOR HANDS-FREE TELEPHONE OPERATION

Frank Duff, Arvada, and James Louis Simon, Denver, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,024
Int. Cl. H04m 1/60
U.S. Cl. 179—81 B 12 Claims

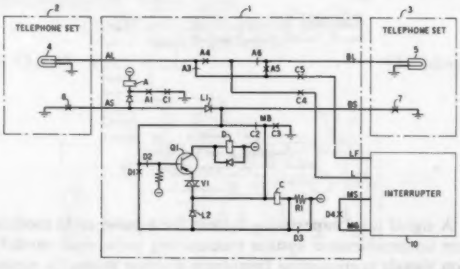


A key telephone intercom system is disclosed for interconnecting hands-free telephone stations and conventional key stations. The hands-free mode of operation is automatically activated on all incoming calls at equipped stations to permit the called subscriber to communicate entirely without the necessity for manual operations. The circuitry for enabling this operational mode includes a memory and ringing detection circuitry comprising a unique PNPN transistor circuit for activating the loudspeaker and microphone assembly on each call and for permitting the called station to alternate between conventional and hands-free station operation.

3,743,792
MESSAGE WAITING LAMP ARRANGEMENT

Frank Duff, Arvada, and James Louis Simon, Northglenn, both of Colo., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 15, 1971, Ser. No. 180,544
Int. Cl. H04m 1/26
U.S. Cl. 179—84 C 9 Claims



A "message waiting" facility is disclosed for key telephone systems. The facility connects directly to station sets and is

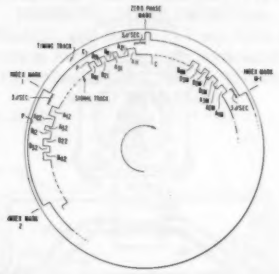
controlled by momentary key depressions in a preordered sequence to light or extinguish visual indicators at the called and calling sets.

3,743,793

ANALOG SIGNAL RECORDING AND PLAYBACK METHOD AND SYSTEM

Sidney Thomas Emerson, Port Jefferson, N.Y., assignor to Periphonics Corporation, Rocky Point, N.Y.

Filed Jan. 26, 1971, Ser. No. 109,800
Int. Cl. G11b *27/32, 5/06*
U.S. Cl. 179—100.2 MD **87 Claims**



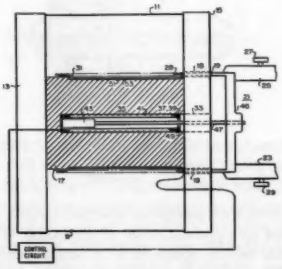
Apparatus and method for recording and reproducing analog signals. When used in a voice response system, audio signals are sampled at approximately a 5 kHz rate, and the samples are recorded on the track of a magnetic disc or drum. The record medium makes a single rotation in less time than it takes to record or reproduce a word. Thus, the samples are recorded in an interlaced format on the record medium. By storing samples only, much less storage capacity is needed for each signal than in the case where the continuous signal is recorded. The interlacing technique allows fast random access to any signal and does not require the use of buffering circuits. The samples are recorded in the form of pulse widths to provide extremely dense packing of information. Many signal tracks, each having samples of many analog signals recorded in it, utilize a common timing track. This allows the decoder disclosed in application Ser. No. 57,489 to be simplified.

3,743,794

TRANSLATIONAL MOTION APPARATUS FOR THE MAGNETIC TRANSDUCERS OF A DISC MEMORY

John H. Miller, III, Milpitas, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 2, 1972, Ser. No. 231,319
Int. Cl. G11b *5/54*
U.S. Cl. 179—100.2 CA **3 Claims**



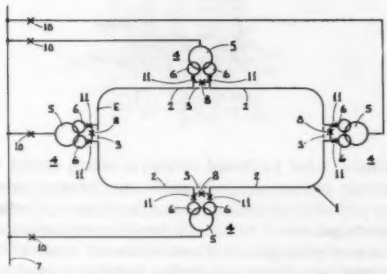
An improved linear motor includes a motion transducer disposed within the core section of the magnetic circuit for the shuttle of the linear motor to provide a velocity output signal substantially unaffected by magnetic fields and eddy currents associated with current in the linear motor coil. The positional adjustment of the magnetic transducers carried by the shuttle of the linear motor is facilitated by the cam action of an adjustment tool which fits within a recess in the shuttle and engages a transverse slot within the support for the magnetic transducer.

3,743,795

ELECTRIC POWER SUPPLY SYSTEMS

David George Ousey, Cambridge, England, assignor to Tracked Hovercraft Limited, London, England

Filed Sept. 7, 1971, Ser. No. 178,202
Int. Cl. B60m *1/00*
U.S. Cl. 191—2 **2 Claims**



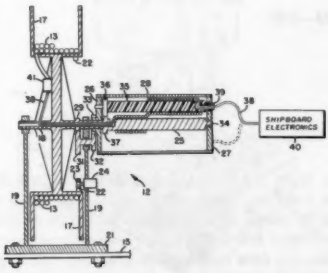
An electric power supply system for supplying a.c. electric power to a vehicle such as a gas cushion vehicle travelling along a prepared track, via a conductor rail extending along the track and co-operating pick-up devices on the vehicle. The conductor rail is divided into a plurality of sections by discontinuities between sections, and at each discontinuity there is provided a transformer having two secondary windings which are separately connected to the adjacent ends of the sections of conductor rail and each of which has a high per unit impedance of preferably greater than 10 percent. The primary windings of the transformers are connected to a.c. supplies substantially in phase with one another.

3,743,796

DEEP SEA BRUSHLESS COMMUTATOR

Donald M. Rosencrantz, Honolulu, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1971, Ser. No. 202,817
Int. Cl. H02g *11/02*
U.S. Cl. 191—12.2 A **6 Claims**



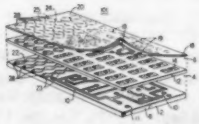
A winch for electrical cable has a tensioned cable input roller pair which permits electrical power to be applied to the cable while the winch is operated. The roller pair is driven by the winch rotation in such a fashion as to prevent axial rotation or twist of the electrical conductor.

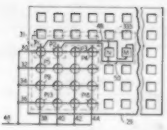
3,743,797

STROKE CODED KEYBOARD SWITCH ASSEMBLY

Clifford James Hoffman, Oceanport, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1971, Ser. No. 175,879
Int. Cl. H01h *41/00*
U.S. Cl. 200—1 R **16 Claims**





A stroke coded keyboard utilizes a switch matrix having crosspoints comprising deformable membrane contacts or switches. Each keyboard character or element is defined by the signals generated by the closure of contacts which produce a specified sequence of connections of i pairs of first (n) and second (m) conductors so that $(nm)^i$ distinct characters can be defined on the keyboard by $n + m$ unique conductors, where n and m are any positive integers greater than one and i is any positive integer greater than one and less than or equal to nm. An element can be keyed very rapidly by the stroke of a stylus on the top surface of the keyboard which sequentially closes the contacts defining the element. The keyboard can be utilized in many configurations such as a data entry keyboard, repertory dialer, or in parallel with or as a replacement for telephone keyboards.

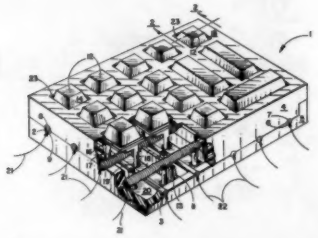
The character element is defined by the signals generated by a specified sequence of connections of i pairs of first (n) and second (m) conductors so that (nm) distinct characters can be defined on the keyboard by N + M conductors, where n and m are any positive integers greater than one and i is any positive integer greater than one or less than or equal to nm.

3,743,798

ELONGATED SPRING COIL CONDUCTORS APPLYING TENSION FORCE TO PUSHBUTTON ACTUATORS IN KEYBOARD MATRIX SWITCH ASSEMBLY

Eugene E. Pentecost, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 13, 1971, Ser. No. 179,882
Int. Cl. H01h *13/28*
U.S. Cl. 200—5 R **4 Claims**



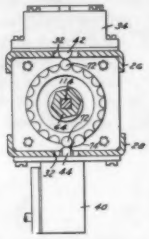
A matrix of conductors is secured within a housing in a normally separated relationship. One set of the conductors is comprised of a flexible material and is positioned in the housing relative to keyboard pushbuttons for providing tensioning force under the pushbuttons. When a pushbutton is depressed, a flexible tensioning conductor is depressed into contact with another conductor of the matrix for providing an electrical output representing the depressed pushbutton.

3,743,799

SELECTOR SWITCH MECHANISM WITH ADJUSTABLE RADIAL CAM INSERT MEMBERS HAVING CIRCUMFERENTIAL OVERLAP FLANGE

Gordon H. Cork, Birmingham, and David M. Tenniswood, Troy, both of Mich., assignors to Gemco Electric Company, Clawson, Mich.

Filed Feb. 8, 1972, Ser. No. 224,467
Int. Cl. H01h *21/82*
U.S. Cl. 200—6 B **2 Claims**



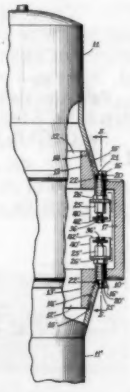
A selector switch mechanism for actuating a plurality of switch means, including an individual disk-like cam for each switch means, said cams being removably mounted on a non-circular shaft, each such cams having a plurality of identical uniformly spaced-apart reentrant recesses about its periphery, and resilient switch actuating elements removably snap-fitted into selected of said recesses to actuate the associated switch means at any predetermined position of rotation of the cams.

3,743,800

MECHANICAL SAFETY INTERLOCK FOR COVERS OF EXPLOSIONPROOF ELECTRICAL HOUSING

Arthur L. Appleton, Northbrook, and Robert J. Pastorel, Chicago, both of Ill., assignors to Appleton Electric Company, Chicago, Ill.

Filed June 2, 1972, Ser. No. 258,983
Int. Cl. H01h *9/20*; H02b *1/12*; H05k *5/04*
U.S. Cl. 200—50 A **5 Claims**



An explosionproof electrical enclosure has a body with two caps threaded on opposite ends of the body. Within the body is an electrical switch operable by a handle positioned outside the body. The caps are held against rotation by pins which extend through the body and are resiliently urged into recesses in the caps. These pins are accessible from outside the body so that they can be moved out of the recesses thereby allowing the caps to be rotated and unthreaded. A second set of pins adjacent and parallel to the first are moved longitudinally by

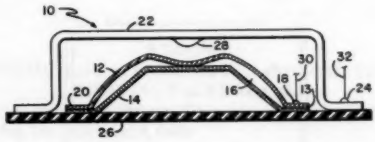
the caps when the caps are removed or replaced. A safety interlocking mechanism includes plates positioned adjacent the inner ends of the pins and movable coincident with the turning of the handle between the switch-open and the switch-closed position. This interlocking mechanism prevents the first pins from being unseated from the cap recesses so long as the electrical switch is closed and prevents the handle from being turned from the switch-open to the switch-closed position so long as one or both of the second pins detects the absence of a cap.

3,743,801

TIRE DEFLATION PRESSURE SWITCH USING A DIMPLING DOME PRESSURE

William R. Brobeck, and Buddy F. Lane, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Mar. 23, 1972, Ser. No. 237,386
Int. Cl. H01h *35/24*
U.S. Cl. 200—61.25 5 Claims



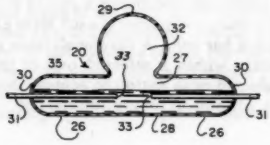
The tire deflation pressure switch will energize a means for indicating when the air pressure in the tire drops below a predetermined point. The pressure switch is based on a sealed enclosure comprising a thin shell dome shaped diaphragm forming one contact of the switch. The other contact provides a prestress force on the dome. When exposed to the pressure within the tire, the diaphragm will buckle if the pressure is greater than a preselected value. The buckle will appear as a small dimple in a portion of the dome. Means are provided to limit the dimpling of the dome.

3,743,802

ELONGATE HOUSING HAVING OUTSTANDING PROTRUSIONS FOR TILTABLE CONDUCTIVE FLUID TYPE IGNITION SAFETY SWITCH

Joseph F. Avenick, 2402 Hartford Drive, Glendora, N.J.

Filed June 23, 1972, Ser. No. 265,447
Int. Cl. H01h *29/20, 35/02*
U.S. Cl. 200—61.47 6 Claims



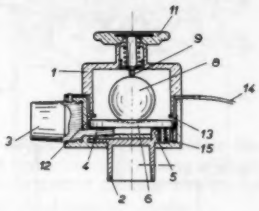
An ignition safety switch for a vehicle to automatically open the ignition circuit upon a predetermined tilting or inclination of the vehicle, including an elongate hollow body having a pair of laterally outstanding hollow protrusions and an upstanding hollow protrusion, a pair of electrical conductors or electrodes extending from exteriorly of the body through the wall thereof and terminating in spaced proximity generally centrally between the several protrusions, and a conductive liquid in the hollow of the body and its protrusions serving to contact and close a circuit between the electrodes when the vehicle is generally horizontal and open the circuit when the vehicle is disposed at a predetermined inclination.

3,743,803

INERTIA SWITCH WITH OSCILLATING CONTROLLER RESTRAINED AGAINST RETURN TO NORMAL POSITION

Carol Roesch, 42 rue du Tir, and Rene Heinimann, 6 Chemin du Wolfloch, both of Colmar, France

Filed Mar. 2, 1972, Ser. No. 231,180
Claims priority, application France, Mar. 9, 1971, 7109016; Nov. 22, 1971, 7142996
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R 6 Claims



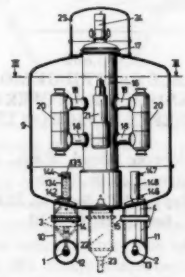
The disclosure is of a circuit-breaker suitable for use in a vehicle and adapted to function automatically to interrupt the circuit from the battery of the vehicle if the latter suffers a shock or impact, the circuit-breaker comprising a sealed insulating housing in which is mounted an inertia weight which can be displaced by a horizontal shock force from any direction and thereby releases a conducting contact plate which is moved by springs so as to break the circuit.

3,743,804

METAL CLAD ELECTRIC DISTRIBUTION AND SWITCHING PLANTS FOR HIGH VOLTAGES

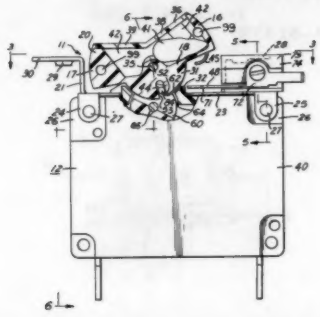
Egbertus Adrianus Frowein, Arnhem, Netherlands, assignor to N.V.C.O.Q., Utrecht, Netherlands

Filed Mar. 1, 1972, Ser. No. 230,615
Claims priority, application Netherlands, Mar. 5, 1971, 7102940
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 B 15 Claims



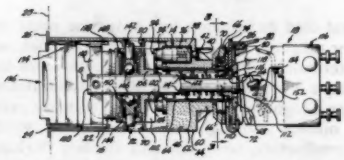
A metal clad distribution and switching plant comprising panels for outgoing and incoming cables or lines, said panels being interconnected by busbars, each phase of said panels comprising a low-pressure-vessel filled with insulating gas and containing a high-pressure-vessel filled with arc extinguishing gas and outside said high-pressure-vessel all switches, connecting conductors, terminals and auxilary devices forming part of said phase, one of said switches being a gas blast circuit-breaker consisting of a series connection of pairs of cooperating contacts, each one of said pairs being accommodated in an individual switching vessel connected by a short conduit to said high-pressure-vessel.

3,743,805
LIGHTED ACTUATOR ASSEMBLY
Thomas Guinan, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed Jan. 21, 1972, Ser. No. 219,709
Int. Cl. H01h 9/18
U.S. Cl. 200—167 A 15 Claims



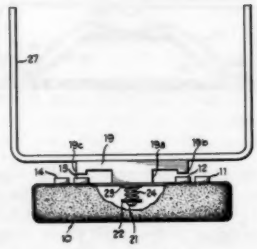
An actuator mechanism for a switch or a circuit breaker comprising a rocker handle having a cavity for housing an indicator lamp. The lamp is energized when the rocker handle, and consequently the main contacts of the switch or circuit breaker, are in a first position, and de-energized when the rocker handle and the main contacts are in a second position. The lamp is located beneath a translucent cover which may be marked with suitable indicia to display the condition of the main contacts. The lamp is connected in series with a power source through a pair of rocker contacts carried by the rocker handle and pivotable therewith. The rocker contacts are movable into or out of engagement with a pair of stationary contacts which are supported adjacent the rocker handle, the stationary contacts and the support means therefor being located in the space between the top surface of the switch or circuit breaker case and the lower wall of the panel to which the case is mounted. When the stationary contacts are in engagement with the rocker contacts, a conductive path is completed from the power source through the indicator lamp to illuminate the rocker handle, thereby indicating the condition of the main contacts.

3,743,806
RELEASABLE CARTRIDGE MOUNTED SERVOMECHANISM FOR AN OPERATING UNIT LATCHED TO A KEEPER DEVICE ON THE CARTRIDGE THEREOF
Maurice D. Fuller, Mercer Island, Wash., assignor to Korry Manufacturing Company, Seattle, Wash.
Filed May 8, 1972, Ser. No. 251,221
Int. Cl. H01h 9/20
U.S. Cl. 200—167 A 10 Claims



The servomechanism and the keeper device are especially designed to withstand high impact forces. In particular, the servomechanism has a pair of telescopically assembled caged springs which vary the bias on the mechanism in the respective reciprocable directions thereof; whereas the keeper device has a catch plate therein which must be displaced to one side, against a bias, to latch and unlatch the operating unit with respect thereto.

3,743,807
HOSPITAL BED CONTROL MECHANISM FOR HANDICAPPED PATIENT
Robert C. Miller, Elgin; Carl K. Miller, Libertyville, and Donald L. Paulson, Meadows, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 21, 1971, Ser. No. 191,280
Int. Cl. H01h 3/14
U.S. Cl. 200—172 A 1 Claim

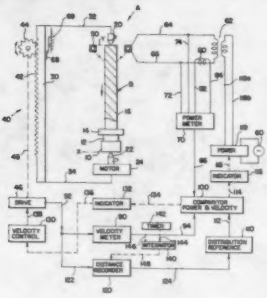


Positioning of a motorized hospital bed may be remotely controlled by a handicapped patient, with poor muscular coordination or very little strength, by means of a patient-actuated control mechanism uniquely constructed to obtain high mechanical advantages so that very little force need be exerted by the patient on the mechanism to effect a desired control. Moreover, the point at which force is applied is not critical. Briefly, a rocker bar is pivotally mounted to a switch box at the midpoint between a pair of spring-loaded push buttons, each of which controls the same adjustment (for example, back positioning) but in opposite directions. Clockwise tilting of the rocker bar depresses one of the push buttons, while counterclockwise tilting actuates the other. High mechanical advantages are achieved by attaching to the rocker bar an actuator which essentially constitutes a pair of levers with large surface areas at their end portions, each lever extending from one of the rocker bar ends. A very small force applied by the patient anywhere within a selected one of the large areas depresses a selected push button to achieve desired positioning of the back adjustment for the hospital bed.

3,743,808
METHOD OF CONTROLLING THE INDUCTION HEATING OF AN ELONGATED WORKPIECE
Robert J. Kasper, Seven Hills, Ohio, assignor to Growth International, Inc., Cleveland, Ohio
Filed Mar. 27, 1972, Ser. No. 238,232
Int. Cl. H05b 5/04
U.S. Cl. 219—10.41 7 Claims

There is provided a method of controlling the heating of an elongated, rotating workpiece between a starting point and an ending point when the workpiece is being heated by an induction heating coil surrounding the workpiece and energized by

a controllable power supply. The method includes controlling the power through the inductor and/or the scanning velocity



of the inductor by comparing the instantaneous power and the instantaneous velocity with a known energy distribution profile.

3,743,809

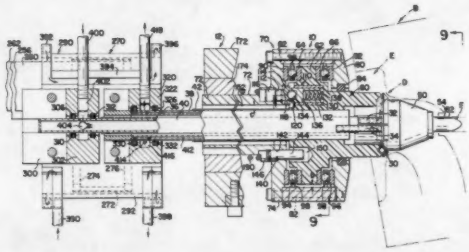
METHOD AND APPARATUS FOR INDUCTIVELY HEATING VALVE SEATS

Anthony F. Delpaggio, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,493

Int. Cl. H05b *5/00*

U.S. Cl. 219—10.57 **16 Claims**



A method and apparatus for simultaneously heating the conical surfaces of first and second valve seats lying generally in a given plane on an engine component, which method and apparatus comprises mounting two inductors for independent reciprocal and lateral movement with respect to a common frame and biased outwardly therefrom, moving the common frame toward the plane of the valve seats until each is stopped by contacting the engine component, locking the two inductors with respect to the common frame, moving the common frame away from the valve seats to provide the necessary coupling gap, and then energizing the inductors to inductively heat the valve seats preparatory to quench hardening thereof.

3,743,810

INDUCTION HEATING APPARATUS

Pierre Binard, Embourg, and Joseph Trine, Oupeye, both of Belgium, assignors to Elphiac, Brussels, Belgium

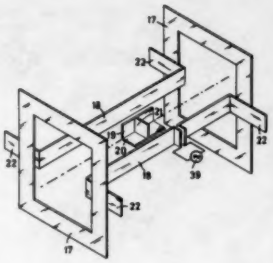
Filed July 6, 1972, Ser. No. 269,310

Claims priority, application Belgium, July 8, 1971, 105624

Int. Cl. H05b *5/18*

U.S. Cl. 219—10.67 **7 Claims**

An induction heating apparatus for heating in depth the surface of the rolls of a rolling mill including an inductor fed by an alternating current of low or medium frequency and a device permitting the rolls to rotate around their axes. The inductor comprises two end frames and two lateral conductors connecting the two end frames so as to form an inductor having two longitudinal symmetry planes which are perpendicular with respect to each other. There is also provided a device for



regulating the device permitting to rotate the rolls around their axes, such regulating device being arranged so as to permit the axes of the rolls to coincide with the intersection line of the two longitudinal symmetry planes.

3,743,811

APPARATUS FOR CONTINUOUS INDUCTION HEATING

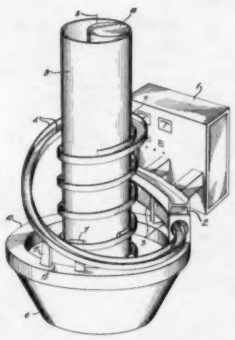
Louis Klopfert, Bruxelles, Belgium, assignor to Elphiac, Bruxelles, Belgium

Filed Jan. 3, 1972, Ser. No. 215,024

Claims priority, application Belgium, Jan. 6, 1971, PV 2763

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.69 **7 Claims**



The apparatus for continuous induction heating comprises a generator of alternating current, feeding an inductor through which pass rails provided with a vibratory movement, and is characterized by the fact that the inductor is disposed around the rails which are secured by means of supports to a receptacle animated by rotating vibrations around an axis traversing the receptacle from bottom to top. The upstream ends of the rails plunge inside the receptacle, whereas the free downstream ends thereof are located outside the receptacle.

3,743,812

SELF-CENTERING CLAMP FOR BUTT-WELDING TUBES

Jean-Pierre Peyrot, 1, Avenue de la Division du General Leclerc, Villejuif, France

Filed Aug. 16, 1971, Ser. No. 171,877

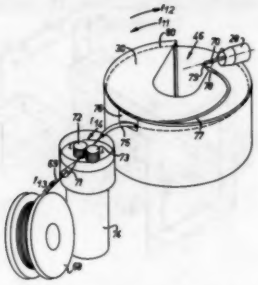
Claims priority, application France, Aug. 18, 1970, 7030356

Int. Cl. B23k *9/02*

U.S. Cl. 219—60 A **1 Claim**

Self-centering welding clamp fitted with a rotating drum on which a filler-metal wire supply reel or spool is designed to

feed the weld ahead of the electrode, said wire being driven by knurled wheels at a certain speed in one direction or another between an angled coupling connected to the fixed body of the clamp and a flexible sheath embedded inside the rotating



drum by means of a system of synchronization between the motor of the drum and that of the knurled wheels in order to permit, in butt-welding two tubes by circular welding, to recharge the weld as desired with filler-metal.

3,743,813

METHOD FOR AUTOMATIC MANUFACTURE OF METAL CONTAINER BODIES, AND WELDING MACHINE FOR APPLICATION THEREOF

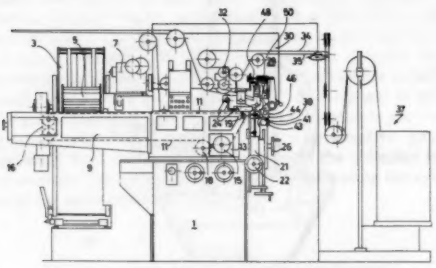
Paul Jakob Opprecht, im hintern Barnold, 8953 Bergdietikon, Switzerland

Division of Ser. No. 110,015, Jan. 27, 1971. This application Nov. 22, 1971, Ser. No. 201,008

Claims priority, application Switzerland, Feb. 10, 1970, 1868/70; Jan. 7, 1971, 172/71

Int. Cl. B23k *31/06*

U.S. Cl. 219—67 **10 Claims**



An apparatus for the automatic continuous, high-speed manufacture of metal containers is disclosed utilizing a welding machine with electrode rolls. The blanks are stacked and rounded and moved toward the welding point on a first conveyor. The rounded blanks are then transferred to a second conveyor operating at the welding speed which is less than the speed of the first conveyor. The apparatus includes means for reducing the speed of the rounded blanks below the welding speed immediately before the transfer from the first to the second conveyor, and to increase their speed above the welding speed immediately after the transfer so as to compensate for the speed reduction before the transfer.

3,743,814

OXYGEN LANCE

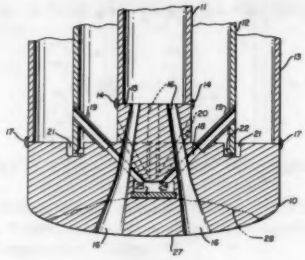
Grant A. Oakes, RD No. 4, Cortland, Ohio

Division of Ser. No. 99,570, Dec. 18, 1970, Pat. No. 3,676,634. This application Mar. 20, 1972, Ser. No. 236,507

Int. Cl. C21c *5/34*

U.S. Cl. 219—76 **3 Claims**

An oxygen lance is disclosed such as used by the steel industry in connection with introducing oxygen into open-hearth or basic oxygen furnaces containing molten steel. The oxygen lance has tubular coolant channels and an oxygen supply channel with an apertured brass casting forming the oxygen



delivery tip. The tip includes a coolant chamber centrally thereof. The coolant channels of the lance are placed in communication with the coolant chamber for an improved cooling effect.

3,743,815

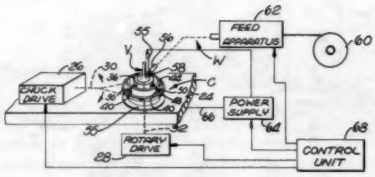
SYSTEM FOR PRODUCING VALVES AS FOR INTERNAL-COMBUSTION ENGINES

Marion D. Woods, Whittier, Calif., assignor to Stoody Company, Whittier, Calif.

Filed Oct. 6, 1972, Ser. No. 295,751

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **10 Claims**



A system is disclosed for use in the production of valves that include a disk or head which is integral with an axially-extending shank or stem. As disclosed herein, a form or blank of such a valve initially is provided (as by various metal-forming techniques) with an annular groove at the peripheral edge of the head. The valve form is then placed in a chuck to provide electrical contact with substantially the entire periphery of the valve head thereby affording a locus of short paths for heat flow and an arc-welding electrical current. In accordance herewith, the valve is then rotated in relation to an arc-welding apparatus to accomplish an annulus of hard metal in the groove of the valve form. Finally, the valve form is finished by smoothing the deposited annulus to provide a seating surface that will matingly engage an engine port to accomplish closure.

3,743,816

RESISTANCE-TYPE SPOT WELDING MACHINE

Ryoda Sato, 1-8-25, Ohama-cho, Amagasaki-shi, Hyogi-ken, Japan

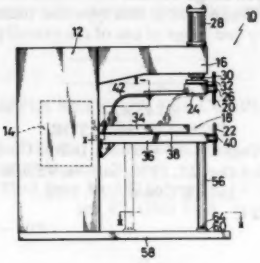
Filed Oct. 12, 1971, Ser. No. 188,254

Int. Cl. B23k *11/10*

U.S. Cl. 219—86 **7 Claims**

Since the operative distances on conventional resistance-type spot welding machines are basically unchangeable, a constant impedance has to be used. When no large operative space is in fact required for welding, such as with articles of small dimensions, power consumption becomes unnecessarily large. The present invention permits to reduce power loss as

far as possible by adjusting the depth and/or distance of the operative welding space, to provide an adequate space which



depends on the dimensions of the articles to be welded, so as to be operative at minimum impedance and thus maximum power factor.

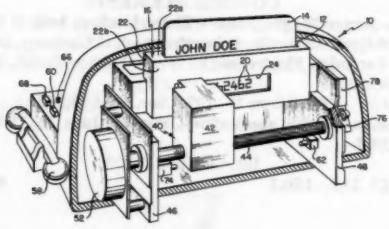
ERRATA

For Classes 219—121 thru 219—378 see:
Patents Nos. 3,743,776 thru 3,743,782

3,743,817
DATA CARD TERMINAL

Manfred R. Kuehnle, Lexington, Mass., assignor to Audac Corporation, Burlington, Mass.

Filed Nov. 12, 1970, Ser. No. 88,801
Int. Cl. G06k *7/00, 7/02;* **F15b** *5/00*
U.S. Cl. 235—61.11 J **3 Claims**

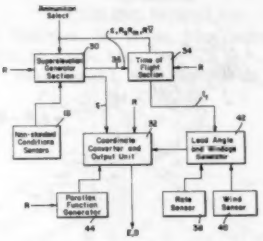


A data card reading system employs a read head arranged to scan embossed characters on a data card. The character at each character location on the card is composed of a number of embossed segments and the identity of the character is determined by the placement of the segments at a given character location. The read head contains an array of nozzles through which air issues toward the card. When the head is opposite each character location on the card, the nozzles are arranged to direct air toward different parts of that location at which character identifying segments might be. The presence of a character identifying segment opposite a particular nozzle is reflected by a change in back pressure at that nozzle. These pressure changes are detected to develop an electrical analog of the character on the card for transmittal to a remote location via telephone lines.

3,743,818
BALLISTIC COMPUTER

Paul M. Marasco, Cherry Hill, N.J.; Millard M. Frohock, Jr., and William E. McAdam, Jr., both of Thousand Oaks, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Marasco and Hughes Aircraft Company, Culver City, Calif., by said Frohock and McAdam

Filed Nov. 26, 1971, Ser. No. 202,449
Int. Cl. G06g *7/26, 7/80*
U.S. Cl. 235—61.5 R **7 Claims**

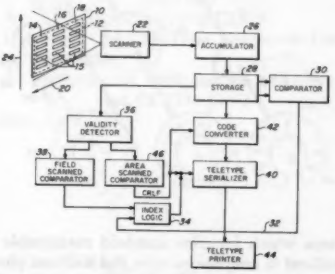


A ballistic computer comprising a first section for computing the ballistic elevation angle signal by the mechanization of a power series as a function of target range, the selected ammunition type, and variations in firing conditions from standard values; and a second section for computing a time of flight signal as the sum of the ballistic elevation angle signal and target range, with the scale factors of the summation circuit being a function of the selected ammunition type.

3,743,819
LABEL READING SYSTEM

Christos B. Kapsambelis, Canton, and David J. Collins, Duxbury, both of Mass., assignors to Computer Identics Corporation, Westwood, Mass.

Filed Dec. 31, 1970, Ser. No. 103,159
Int. Cl. G06k *7/14, 19/06;* **G06f** *11/02;* **G06k** *9/18*
U.S. Cl. 235—61.11 F **32 Claims**



A system is disclosed for processing data from an area of information including at least one field of information including means for accumulating a segment of information derived from a scan of the area, means responsive to the means for accumulating, for detecting whether the segment of information is a valid or invalid field of information, means, responsive to the means for detecting, for determining a first predetermined ratio of number of valid scans to number of invalid scans which represents that a field of information has been scanned, and means responsive to the means for determining for reading out the segment of information.

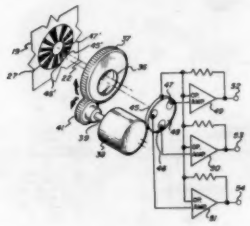
3,743,820
RANDOM ORIENTED DECODER FOR LABEL DECODING

Samuel P. Willits, and William L. Mohan, both of Barrington, Ill., assignors to Spartanics, Ltd., Patatine Village, Cook County, Ill.

Continuation-in-part of Ser. No. 806,371, March 12, 1969, Pat. No. 3,643,063. This application Feb. 14, 1972, Ser. No. 225,840

Int. Cl. G06r 7/00

U.S. Cl. 235—61.11 E 11 Claims



A rotary scanning decoder for reading labels having binary data bits each of which comprises a pair of contrasting areas, the ratio of areas in each bit defining the bits' binary status. The position of the label relative to the decoder is not critical so long as substantially all of the label is seen by the decoder. Means are provided for eliminating ambiguities due to mutilation or foreign material on the label.

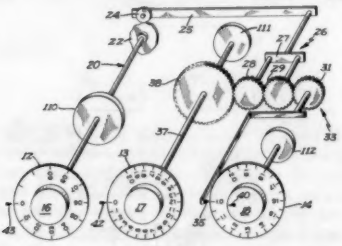
3,743,821
DENSITY CALCULATOR

George Pamlenyi, Saint Paul, Minn., assignor to Chesley F. Carlson Co., Minneapolis, Minn.

Continuation-in-part of Ser. No. 55,049, July 15, 1970, Pat. No. 3,672,767. This application Sept. 10, 1971, Ser. No. 179,441

Int. Cl. G06c 3/00

U.S. Cl. 235—64.7 15 Claims



Apparatus which receives standard measurable values of density utilized in continuous tone and halftone photographic processes and which can automatically calculate and enter additional compensating values of density. The apparatus is designed for use with a photo process timer which controls main, highlight and flash exposure times of lamps which are conventionally used in the continuous tone and halftone photographic processes. Dials which have indicia thereon calibrated to indicate standard values of density are provided which can be connected to variable resistors and capacitors located in the photo process timer. Manipulation of the density dials preselects resistance and capacitance values to control the potential to which capacitors are charged. The present invention is then utilized to transfer density values so entered on the dials to an additional flash density dial which provides flash exposure to compensate for any screen range which is less than the density range of the copy being reproduced. Also disclosed are variable indicators which can be utilized to calibrate an alternative set point which has the effect of extending the screen range beyond that which can normally be handled with an apparatus of this type and therefore allow a greater flexibility and range of use of the overall photographic system.

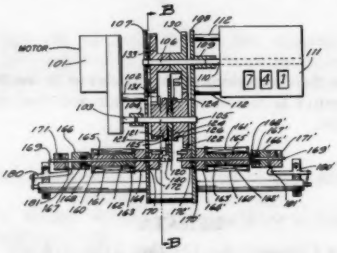
3,743,822
SIGNAL SUMMATOR

Frederick W. Pfleger, 1152 Barbara Drive, Cherry Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 75,956

Int. Cl. G06m 3/14, 1/08

U.S. Cl. 235—92 C 7 Claims



An accumulator of a multiplicity of sources of add and subtract signals in which the signals can be of any duration and can occur in any sequence, including simultaneous occurance. The accumulator comprises a rotary power source, intermediate storage elements for storing the signals as received from the sources, control elements for transferring the information in the intermediate storage elements to a final storage, such as a display unit or a sensing unit, resetting elements for resetting the intermediate storage to normal in a sequence and a timing controlled by the rotary power source.

3,743,823
FEEDBACK CONTROL SYSTEM WITH DIGITAL CONTROL ELEMENTS

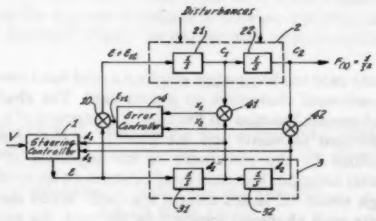
Hans-Jurgen Berger; Hans-Wilhelm Usedom, both of Bremen, and Horst Michaelis, Delmenhorst, all of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed June 15, 1971, Ser. No. 153,255

Claims priority, application Germany, June 23, 1970, P 20 30 739.5

Int. Cl. G05d 15/00

U.S. Cl. 235—150.1 8 Claims



A feedback control system having a digital steering controller connected to be directly responsive to a command signal and to at least one other input signal, and providing a train of first output signals received by a simulator, constructed for simulating operation and response of a controlled system. At least one output signal of the simulator is the other

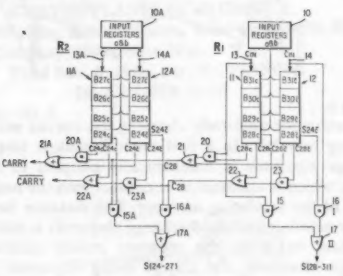
input signal of the steering controller, and is additionally fed to a digital error controller together with an output signal of the controlled system, that corresponds functionally to the output signal of the simulator. The digital error controller forms an error signal and provides an output that is combined with the output of the steering controller and fed to the controlled system.

3,743,824

CARRY RIPPLE NETWORK FOR CONDITIONAL SUM ADDER

Allan Marshall Smith, Moorestown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed June 16, 1971, Ser. No. 153,665
Int. Cl. G06f 7/50
U.S. Cl. 235—175 **6 Claims**



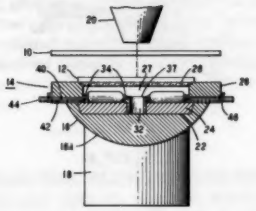
A high-speed carry ripple or propagation circuit including a network of gates and load devices for use with a conditional sum adder. The transmission gates and load devices comprise semiconductor elements. The transmission gates are combined in series and parallel paths to effect desired signal control. The carry ripple circuit generates the required propagated carry signal for the conditional sum adder more rapidly than many prior art networks.

3,743,825

ILLUMINATION ASSEMBLY

Barry G. Cohen, 39 Cromwell Court, Berkeley Heights, N.Y.

Filed July 13, 1971, Ser. No. 162,132
Int. Cl. F21v 33/00
U.S. Cl. 240—2 MA **6 Claims**



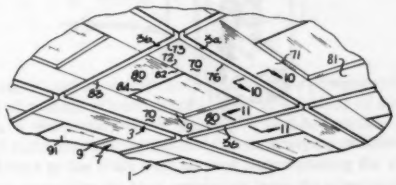
For use in illuminating a semiconductor slice to be aligned with a patterned mask, an illumination assembly comprises a substantially cylindrical, disc-like housing having a bottom surface adapted to fit a complementary upper surface portion of a chuck member of the alignment machine. The interior of the housing is hollow and contains a plurality of infrared sources, e.g., two-terminal, incandescent infrared lamps secured along radii extending from the center of the cylinder. One terminal of each lamp is connected to a ground post located at the center and extending through the lower surface; the other terminals are passed through separate apertures in the housing wall to an annular contact ring which is secured to the outer surface of the wall. A voltage applied between the ground post and contact ring, when the chuck is in the alignment position, causes the lamps to radiate through a light transmitting element located in the top surface of the housing and on which is directly placed the semiconductor slice.

3,743,826

CEILING MODULES

Thomas C. Halfaker, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 12, 1970, Ser. No. 88,952
Int. Cl. F21s
U.S. Cl. 240—9 A **11 Claims**



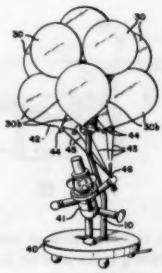
A ceiling module and a ceiling composed of a plurality of the ceiling modules. The modules have a planar ceiling-defining area comprising four rectangular panels arranged about an open seat and supported by a frame above the planar area. The frame consists of an H-shaped structure including a pair of end beams and a bridging member which may also act as an enclosure and reflector for a light source mounted above the open seat. The light source may be a U-shaped or linear fluorescent tube having a novel ballast support. The ceiling system composed of modules of this invention may have a novel air flow system having outlets entirely between edges of modules in one direction and returns entirely between the edges of modules orthogonal to the outlets. The ceiling also may provide fixture mounting tracks between modules.

3,743,827

DECORATIVE LAMP

John H. Holtvoigt, Tipp City, Ohio, assignor to The Dolly Toy Co., Tipp City, Ohio

Filed Aug. 20, 1971, Ser. No. 173,470
Int. Cl. F21s 13/12
U.S. Cl. 240—10 R **4 Claims**



A decorative lamp suitable for a child's room is formed of two similar hemispheres detachably secured together with each having mounting apertures for receiving decorative

shapes thereon such as generally spherical or balloon-shaped, and being formed of translucent material such that they will glow and give a pleasing effect when receiving light from a central source.

3,743,828

LAMP OF VARIABLE LIGHT INTENSITY AND COLOUR

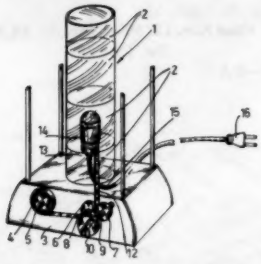
Forghieri Fiorenzo, Via Del Gambero 4; Siena Irmo, Via Paglia 46; Forghieri Wilson, and Forghieri Carmen, both of Via Luigi Vaccari 119, all of Modena, Italy

Filed Oct. 13, 1971, Ser. No. 188,865

Claims priority, application Italy, Oct. 21, 1970, 3592 A/70

Int. Cl. A47g *33/16*; F21p *1/02*

U.S. Cl. 240—10 R **1 Claim**



A lamp is disclosed including a support base supporting a cylinder formed of a plurality of different colored cylindrical sectors, a movable support for an incandescent bulb on the interior of the sectors for positioning the bulb along the length of the cylinder as desired to provide a light effect of desired color with a second embodiment employing arcuate sectors extending along the length of a cylinder and being of different colors with incandescent lamps being provided for rotational positioning behind and in alignment with desired arcuate sectors for providing a desired light effect and in a third embodiment a spherical shell formed of plural different colored sectors is provided enclosing an incandescent bulb with the sectors being adjustable pivotally about the axis of the sphere for providing desired aesthetic light effects.

3,743,829

ROTARY HOLDER FOR LIGHTING FITTINGS

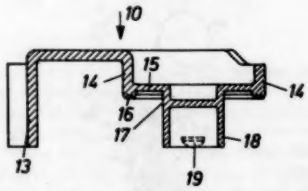
Jupp Muller, and Harald Reigler, both of Neheim-Husten, Germany, assignors to Trilux-Lenze KG, Heidestrasse Neheim-Husten, Germany

Filed July 8, 1971, Ser. No. 160,670

Claims priority, application Germany, July 11, 1970, P 20 34 517.9

Int. Cl. F21v *17/00*

U.S. Cl. 240—153 **11 Claims**



A rotary holder for lighting fittings, comprising an outside member with an operating lever and an inside member with a carrier arm, interconnected through an opening in the casing of a fitting in which the assembled members can turn. The opening in the casing is closed and made dustproof by an annular sealing edge on the outside member bearing on the casing around the opening.

3,743,830

A DEVICE FOR UNIFORMLY CHARGING A NON-PLANAR ELECTROPHOTOGRAPHIC PLATE

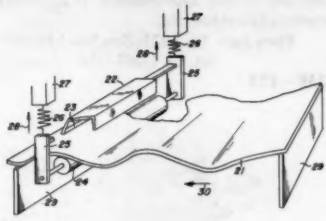
Isoji Takahashi; Masamichi Sato, and Satoru Honjo, all of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 86,553, Nov. 3, 1970. This application Feb. 9, 1972, Ser. No. 224,990

Claims priority, application Japan, Nov. 26, 1969, 44/94931

Int. Cl. G03g *15/02*

U.S. Cl. 250—325 **4 Claims**



Apparatus for uniformly charging the curved surface of an insulating member. In a first embodiment, a single corona discharge electrode is mechanically coupled to a follower member which is maintained in contact with the non-charging surface of the insulating member. The distance between the follower member and the discharge electrode is maintained at a constant value as the member moves relative to the discharge electrode, the charge being deposited uniformly over the charging surface of the insulating member. In a second embodiment, the follower member and discharge electrode are arranged to uniformly deposit charge on a selected portion of the insulating member.

3,743,831

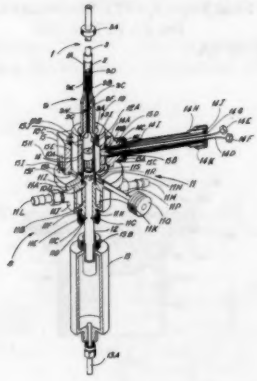
SAMPLING APPARATUS FOR PHOTOELECTRON SPECTROMETRY

Hans Joachim Lempka, Beaconsfield, England, assignor to Perkin-Elmer Limited, Beaconsfield, England

Filed Mar. 31, 1972, Ser. No. 240,072

Int. Cl. H01j *37/26*

U.S. Cl. 250— 425 **21 Claims**



Apparatus for vaporizing solid or liquid samples in a photoelectron spectrometer includes boundary walls of high thermal conductivity defining the sample oven cavity, which cavity includes both the zone in which the sample is vaporized and an adjacent zone in which the vaporized sample is irradiated by the monochromatic photon beam from, for exam-

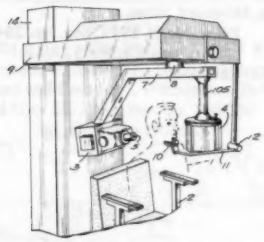
ple, a plasma-discharge photon source. The good thermal conductivity of the boundary walls causes the entire cavity to be maintained at substantially the same temperature, preferably just above the vaporizing temperature of the particular sample. The boundary walls may be heated substantially solely or partially either by a heater or by heat from the adjacent part of the plasma-discharge lamp, each of which is in good thermal contact with part of the boundary walls. The vaporized sample is thus formed as a slowly diffusing molecular cloud and condensation is avoided since the vapor never comes in contact with cooler zones, even upon entering the narrow photon passageway between the source and the sample cavity. Auxiliary cooling may be provided for maintaining parts of the photon source at a desired temperature, depending on the vaporizing temperature of the particular sample.

3,743,832

APPARATUS FOR PRODUCING RADIOGRAPHS OF CURVED PLANES IN AN OBJECT

William E. Wright, Hales Corners, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 6, 1968, Ser. No. 773,807
Int. Cl. G03b 41/16
U.S. Cl. 250—61.5 **6 Claims**



An x-ray source and a film cassette are mounted on opposite ends of an arm that swings in a horizontal plane about a vertical axis so that the cassette and source jointly orbit a patient of whom a panoramic dental radiograph is desired. On an overhead base is a first carriage which is on a track that constrains the carriage to move back and forth in a single line along one coordinate axis. A second carriage is carried on the first carriage and is on a track that constrains it to move only at a right angle to the first carriage along the other coordinate axis. The second carriage has a bearing that supports the horizontal arm. A driving arm is engaged with the second carriage and drives both carriages so that their resultant motion is a semi-ellipse that approximates the shape of the dental arch. The vertical rotational axis of the arm is always on the semi-ellipse or other desired curve. Means are provided for translating the cassette and for keeping the arm perpendicular to the curve at all times.

3,743,833

RADIOGRAPHIC ELEMENTS AND BINDERS

Peter A. Martic, and John M. McCabe, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 16, 1971, Ser. No. 163,464
Int. Cl. H01j 1/62
U.S. Cl. 250— 483 **13 Claims**

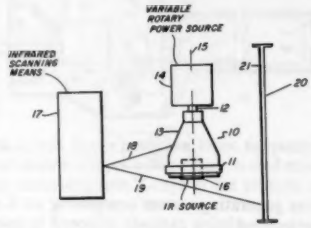
Luminescent radiographic screen binders comprising a combination of a polyurethane elastomer alone or in combination with an alkyl methacrylate polymer in various weight ratios are disclosed. Said screens combined with radiographic sensitive elements exhibit improved optical and physical characteristics.

3,743,834

IR TEST OF ROTATING BANDS

Jay S. Pasman, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,719
Int. Cl. G01n 25/72
U.S. Cl. 250—83.3 D **8 Claims**



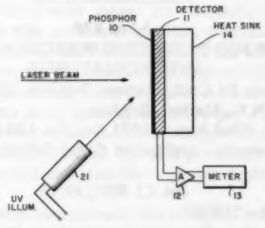
A method and apparatus for evaluating the integrity of the seating of a sintered iron rotating band on a surface of a body such as a projectile, which method is non-destructive. The method includes rotating the body while applying radiated localized heat to the body over an area encompassing the rotating band. Detecting the heat emanating from the rotating band and that surface of the body proximate thereto. Infrared scanning at a point remote from the application of the heat provides an indication of the emanating radiated energy and is dependent on the heat dissipation through the body from the surface as well as from the subject band. Where the band is improperly seated so as to form an air gap between the band and the body, the heat or energy will be conducted away from the band surface at a slower rate than from the adjoining body surface due to the insulation introduced by the air gap. Thus, these thermal differentials detected in the case of an improperly seated band are direct indications of the condition of the band seating and the differential is proportional to the magnitude of the clearance under the band.

3,743,835

LASER IMAGE AND POWER LEVEL DETECTOR HAVING THERMOGRAPHIC PHOSPHOR

Raymond E. Koncen, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1972, Ser. No. 237,426
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H **2 Claims**



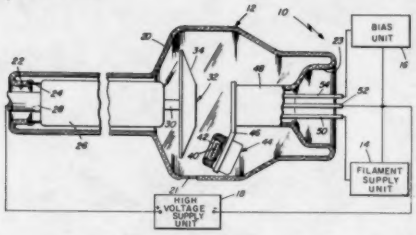
This disclosure is directed to the use of a thermographic phosphor for the power level detection of a laser as well as displaying an image of the laser beam.

3,743,836

X-RAY FOCAL SPOT CONTROL SYSTEM

William P. Holland, West Redding, and Gordon F. Bavor, Norwalk, both of Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Feb. 22, 1972, Ser. No. 227,935
Int. Cl. H05g 1/10
U.S. Cl. 250—99 6 Claims



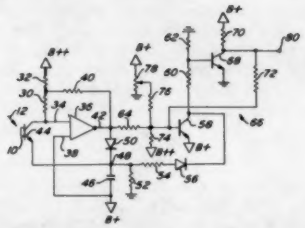
An X-ray generating system comprising an X-ray tube having an electron-emitting cathode disposed in spaced opposing relationship with an anode target surface and supported within a focusing cup which is provided with means for directing emitted electrons into a Gaussian distribution pattern on the target surface, such that the area of the resulting focal spot is minimized and useful X-rays radiate therefrom in a corresponding Gaussian distribution pattern.

3,743,837

PHOTOTRANSISTOR AUTOMATIC GAIN CONTROL

Charles Kent Pooley, Santa Monica, and Edward Dillingham, Pacific Palisades, both of Calif., assignors to Data Source Corporation, El Segundo, Calif.

Filed Jan. 20, 1972, Ser. No. 219,460
Int. Cl. H01j 39/12
U.S. Cl. 250—206 11 Claims



A phototransistor automatic gain control circuit for compensating for variations in intensity of radiation impinging upon the phototransistor. The phototransistor is operated in the knee portion of its characteristic curve. The voltage across the phototransistor is varied in order to vary the gain of the phototransistor to compensate for variations in intensity of the radiation.

3,743,838

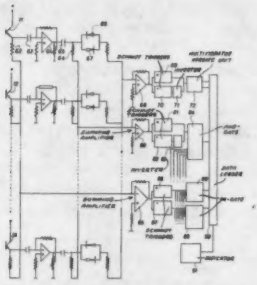
DEVICE FOR DETECTING IRREGULARITIES IN A MOVING MATERIAL

Etienne Marie De Cock, Hamme, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed June 7, 1971, Ser. No. 150,653
Claims priority, application Great Britain, June 8, 1970, 27,618/70
Int. Cl. H01j 39/12
U.S. Cl. 250—219 DF 8 Claims

A device for detecting irregularities in a moving sheet material by detection of light by means of photodetectors after reflection from or passage through the sheet. The output signals of each photodetector are filtered, amplified, clipped and discriminated in a discriminating detector to separate the smaller from the greater irregularities.

An AND-gate to which the unclipped signals of a series of photo-detectors are fed, permits the retrieval of irregularities extending over the width of the sheet.



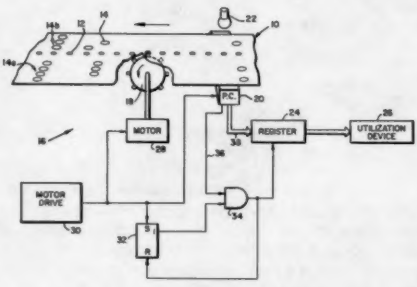
OR-gates to which the unfiltered signals of a series of photo-detectors are fed, permit the retrieval of serious defects in the sheet material.

3,743,839

CONTROL CIRCUIT FOR A TAPE READER

Michael D. Leis, Framingham, and Robert C. Gray, Cambridge, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 3, 1971, Ser. No. 204,565
Int. Cl. H01j 39/12
U.S. Cl. 250—219 D 3 Claims



A tape reader. Periodic pulses energize a driving motor to advance a punched tape past a reading device; they also enable a reading operation. Each motor pulse sets a flip-flop circuit. When a detector senses registration of a sprocket hole in the tape with the reader, it generates an output which, if in time coincidence with the flip-flop output, produces a strobing pulse that causes the reading device to sense data on the tape. The strobing pulse immediately resets the flip-flop circuit to inhibit further strobing pulses until the next motor pulse occurs.

3,743,840

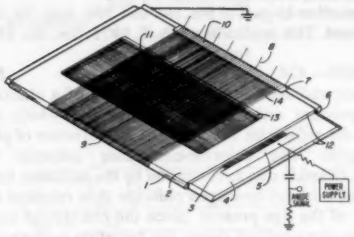
BIFILAR HELICAL MULTIWIRE PROPORTIONAL CHAMBER

Henry A. Thiessen, Los Alamos, N. Mex.; Stanley Sobottka, Charlottesville, Va., and David M. Lee, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 18, 1972, Ser. No. 273,001
Int. Cl. G01t 1/18
U.S. Cl. 250— 336 1 Claim

A helical multiwire proportional chamber for detection of minimum ionizing particles consisting of an array of anode

wires surrounded by a cathode wound in the form of a bifilar flattened helix nearly orthogonal to the anode wires and this chamber having an active area rectangular in shape, a frame comprising two pieces of plexiglass with a central cutout



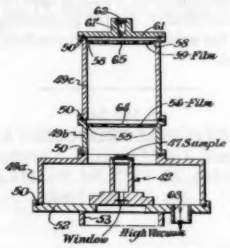
which forms the said active area, the anode wires being fastened to one of the frame pieces and the second frame piece being fastened to the first and the anode wires being connected in parallel to a positive high voltage supply and the cathode wire being connected to ground through a resistor.

3,743,841

METHOD OF DUAL WAVELENGTH X-RAY ANALYSIS

Heribert K. Herglotz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 25, 1971, Ser. No. 146,755
Int. Cl. G01n *23/20*
U.S. Cl. 250— 273 **9 Claims**



A method of dual wavelength X-ray analysis comprising concurrently irradiating a sample in analysis with beams of X-radiation preselected as to wavelength to produce separate diffraction patterns characteristic, respectively, of the atomic crystallographic order and the supramolecular order, and recording the patterns.

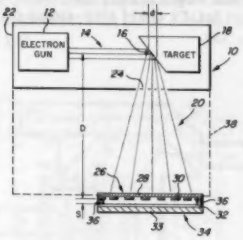
3,743,842

SOFT X-RAY LITHOGRAPHIC APPARATUS AND PROCESS

Henry Ignatius Smith, Sudbury; David Lewis Spears, Acton, and Ernest Stern, Concord, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 14, 1972, Ser. No. 217,902
Int. Cl. G01n *21/34*
U.S. Cl. 250—320 **16 Claims**

A soft X-ray lithographic apparatus for replicating patterns having submicron line widths including a source of soft X-rays, a mask member having a soft X-ray transmitter layer and a soft X-ray absorber layer of submicron thickness whose absorption of soft X-rays produces a soft X-ray image of the pattern on the mask; and a reproduction member consisting of a



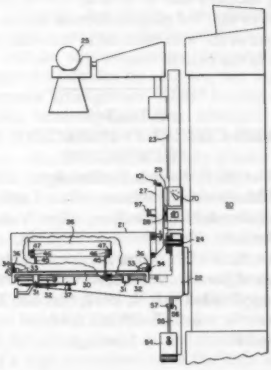
substrate and a soft X-ray sensitive layer supported on said substrate, said sensitive layer being between said substrate and said mask for absorbing soft X-rays in the pattern created by the mask.

3,743,843

TOMOGRAPHIC X-RAY SYSTEM WITH A MOVABLE TABLE

George L. Reser, Cincinnati, Ohio, and Frederick R. Riesz, Newport, Ky., assignors to Sybron Corporation, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,265
Int. Cl. G01n *21/00*
U.S. Cl. 250— 320 **12 Claims**



An x-ray table having a table support, a stationary film cabinet mounted on the support, and a table mounted on the support for longitudinal movement with respect to the film cabinet is provided with means for obtaining plane section radiographs. A tube column is pivotally mounted to the table support and the x-ray tube is mounted on the other end of this column. A plane selector mechanism is mounted on the table. A vertically adjustable pin on the plane selector is coupled to the tube column in an area between the pivot and the x-ray tube. Thus, as the table is moved longitudinally, the tube column is pivoted through an arc. Switches on the tube column initiate and terminate the exposure as the x-ray moves through its arc.

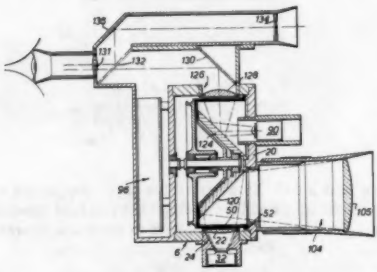
In the preferred embodiment the coupling pin on the plane selector mechanism may be disengaged from the tube column and the tube column may be locked in one position so that the apparatus may also be used for conventional radiographic procedures. The plane selector mechanism is releasably mounted on the table so that it does not interfere with lateral movement of the table.

3,743,844

RADIATION-SENSITIVE SCANNING CAMERA

Nigel P. Kraty, Maidenhead, England, assignor to Wilkinson Sword Limited, London, England

Filed Aug. 11, 1971, Ser. No. 170,821
Int. Cl. G01j 1/02; G01d 5/36
U.S. Cl. 250— 334 16 Claims



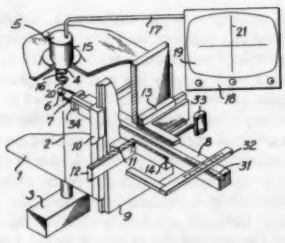
An infra-red camera is disclosed having a cylindrical housing with a window in one wall thereof across which, in a direction normal to the cylindrical axis of the housing, a slit extends. A drum is rotatably mounted within the housing and has a series of axially directed slits in its curved wall which successively pass across the fixed slit in the housing wall, so that the pinhole formed at the intersection of each drum slit with the housing slit performs a line scan of the camera's field of view. In a modification, the fixed slit is removed, and there are two rotatable drums mounted within the housing, one drum having inclined slits in its wall. The drums rotate at different speeds so that the pinhole formed by the intersection of each slit in one drum with each slit in the other drum performs a frame scan of the field of view.

3,743,845

CLOSED-CIRCUIT TV INSPECTION X-RAY MICROSCOPE

Nikolai Vasilievich Rabodzei, Institutskaya ulitsa, 6a, kv. 39; Evgeny Mikhailovich Ljubimov, ulitsa Lenina, 14, kv. 21; Mikhail Nikolaevich Nadobnikov, ulitsa Voxalnaya, 21, kv. 7, and Alexandr Alexandrovich Krokhin, ulitsa Tsentralnaya, 12, kv. 8, all of Fryazino Moskovskoi oblasti, U.S.S.R.

Continuation of Ser. No. 90,268, Nov. 17, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,043
Int. Cl. G01n 21/34
U.S. Cl. 250— 360 5 Claims



A closed-circuit TV inspection X-ray microscope characterized in that means for moving the specimen inside a shielded specimen chamber includes the specimen-chamber wall which supports a specimen manipulator and which is movable in its own plane. The microscope is mainly intended to measure hidden flaws in small-size products having an opaque enclosure.

3,743,846

PLASTIC RADIATION INDICATOR OF THE COLOR CHANGE TYPE

Shoichi Matsumoto, Hodogaya-ku, Yokohama-shi; Tomomichi Tsukada, Kawasaki-shi; Kazuo Umetsu, and Hiroyuki Fukaya, both of Kamakura-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Toyo Chemical Co., Ltd., Kamakura-shi, Japan

Continuation-in-part of Ser. No. 664,396, Aug. 30, 1967, abandoned. This application Feb. 8, 1971, Ser. No. 113,755
Int. Cl. G01t 1/04
U.S. Cl. 250— 474 5 Claims

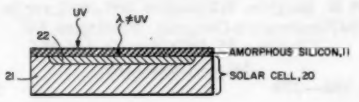
A plastic radiation indicator consisting of a chlorine-containing polymer and an acid-sensitive dye which changes colors in the solid state according to the variation of pH in the acid region. The chlorine-containing polymer releases hydrogen chloride due to excitation by the radiation irradiated to the polymer, the hydrogen chloride thus released changes the color of the dye present. Since the changes of color correspond to the irradited doses, the radiation indicator can be used in dosimetry.

3,743,847

AMORPHOUS SILICON FILM AS A UV FILTER

Bernard W. Boland, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 1, 1971, Ser. No. 148,799
Int. Cl. H01j 39/00; G02b 5/22
U.S. Cl. 250— 510 2 Claims



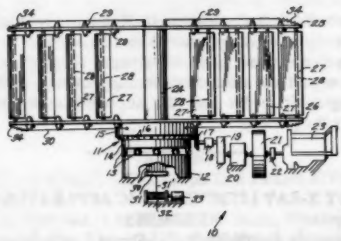
There is disclosed the use of a thin amorphous silicon film as a narrow-band rejection filter which is used either as a mask to UV light in semiconductor device processing or is used as a protective shield for solar cells which overheat in the presence of ultraviolet light.

3,743,848

WIND DRIVEN POWER PRODUCING APPARATUS

Nathaniel Strickland, 1105 Ortega St., Carlsbad, N. Mex.

Filed Feb. 25, 1972, Ser. No. 216,346
Int. Cl. F03d 9/00
U.S. Cl. 290—55 4 Claims



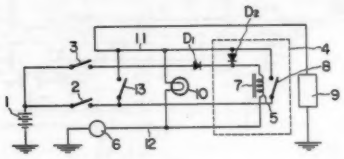
A device for generating electric current by the force of the wind. This device consists primarily of a turntable with arm and vane means for transferring the force of the wind to rotate a generator.

3,743,849

APPARATUS FOR AUTOMATICALLY DISCONNECTING POWER CIRCUIT FOR VEHICLES DUE TO IMPACT

Akio Iwata, Kiryu, Japan, assignor to Mitsubadenkiseisakusho Co., Ltd., Kiryu , Gunma-Prefecture, Japan

Filed May 18, 1971, Ser. No. 144,473
Claims priority, application Japan, Sept. 21, 1970, 45/92898; Sept. 21, 1970. 45/81964
Int. Cl. H02g 3/00
U.S. Cl. 307—10 R 6 Claims



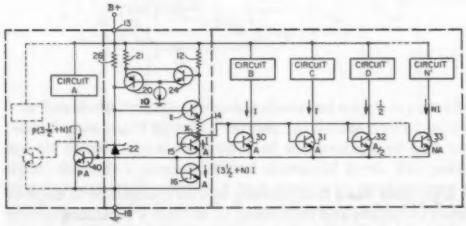
In cases where any trouble occurs due to the collision, rear-end collision or the like of vehicles, particularly of automobiles, this apparatus is used to automatically disconnect the power circuit instantaneously by the impact force caused upon the trouble, further to automatically cut off the fuel circuit by means of a solenoid valve and the like to prevent fire from breaking out after the collision.

3,743,850

INTEGRATED CURRENT SUPPLY CIRCUIT

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 186,269, Oct. 4, 1971, abandoned.
This application June 12, 1972, Ser. No. 261,915
Int. Cl. H02j 1/100; H02m 3/14
U.S. Cl. 307—32 7 Claims



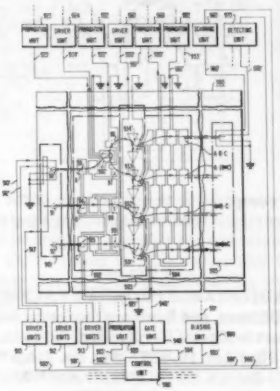
DC biasing currents for a monolithic integrated circuit are obtained from a single regulated current reference source supplying current through first and second series connected diodes to establish points of reference potential. Some of the current source transistors which are referenced to this regulated current source have the base-emitter junctions thereof connected across the first diode, and the emitter current of these current source transistors is collected and added to the current from the regulated current source and supplied through the second diode. This second diode, with a larger regulated current flowing therethrough, is used to reference additional current source transistors for substantially larger currents without necessitating the use of high ratio area scaling of the emitter areas of these current source transistors.

3,743,851

MAGNETIC SINGLE WALL DOMAIN LOGIC CIRCUIT

Haruki Kohara, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,435
Claims priority, application Japan, Nov. 5, 1970, 45/97354
Int. Cl. H03k 19/168; G11c 11/14, 19/00
U.S. Cl. 307—88 LC 13 Claims



A magentic logic circuit creates and moves around cylindrical magnetic domains (magnetic bubbles) to provide a plurality of logic functions. Magnetic bubbles are created and transferred to a plurality of magnetic weighting circuits. The transfer of a magnetic bubble to a weighting circuit corresponds to a single logic input. Each weighting circuit divides the magnetic bubble applied thereto into a predetermined number of magnetic bubbles by splitting the input magentic bubble. A magnetic arrangement circuit having a plurality of magnetic bubble retaining locations arranged in columnar fashion receives all of the magnetic bubbles from the weighting means. Each bubble is initially placed in a separate location of the arrangement means. The magnetic bubbles are then moved in the direction of one end of the column of locations to result in a final arrangement of magnetic bubbles. The final arrangement is independent of the initial locations of bubbles in the arrangement means. It is dependent upon the total number of bubbles placed in the arrangement means, the actual position of the bubble holding locations and the repulsion of adjacent bubbles. The presence or absence of bubbles in locations of the arrangement means following arrangement is indicative of a logic combination of the logic inputs. Gating means are provided to transfer the magnetic bubbles from final locations of the arrangement means to corresponding output means where a plurality of detector means can detect the presence of magnetic bubbles to provide output indications of various logic functions.

3,743,852

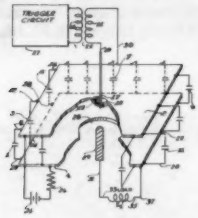
LOW-IMPEDANCE, HIGH-VOLTAGE DISCHARGE CIRCUIT

Bernard J. O'Keefe, and Herbert E. Grier, both of Boston, Mass., assignors to EG&G, Inc., Bedford, Mass.

Filed June 18, 1953, Ser. No. 362,516
Int. Cl. H02m 3/06
U.S. Cl. 307—109 15 Claims

A low-impedance, high-voltage discharge circuit is disclosed having a plurality of capacitors connected in parrallel by plate conductors, a power supply for charging the capacitors and a circuit consisting of a discharge gap connected in series with a single load or with a plurality of loads connected in parrallel by parrallel plate conductors, the circuit being

connected in parrallel with the plurality of capacitors. Each connecting lead is made as short as possible and its inductance



is negligible compared to the inductance of the plate conductors. A trigger circuit renders the discharge gap conductive.

3,743,853

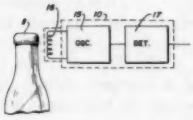
ADJUSTABLE PROXIMITY SENSOR

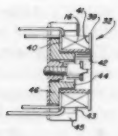
Kenneth C. Dittman, and Sunthorn Skulpone, both of Chicago, Ill., assignors to Electro Corporation, Sarasota, Fla.

Filed Jan. 10, 1972, Ser. No. 216,679

Int. Cl. H01f *15/02, 21/06;* H05

U.S. Cl. 307—116 **6 Claims**





An oscillatory proximity sensor which detects the presence of a conductor or metal adjacent the coil of an oscillator by virtue of the change in amplitude of the oscillations. The coil, oscillator and detector circuit are located within a probe housing mounted at the sensing location and the oscillator and detector utilize printed, integrated or hybrid circuitry. An adjustable core for the coil provides a sensitivity adjustment.

3,743,854

SYSTEM AND APPARATUS FOR DUAL TRANSMISSION OF PETROCHEMICAL FLUIDS AND UNIDIRECTIONAL ELECTRIC CURRENT

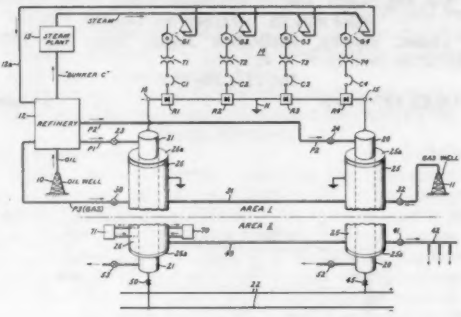
Christy W. Bell, Berwyn, and Charles H. Titus, Newtown Square, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Sept. 29, 1971, Ser. No. 184,701

Int. Cl. H01b *7/00*

U.S. Cl. 307—147 **19 Claims**

Discloses a multiple duct delivery conduit for dual transport of fluid refinery products and direct current electric power over long distances in combination with a system of energy conversion for supplying such products and power from one or more oil and/or gas wells at a source location. The dual conduit comprises two conductive pipes each used to convey



electric current and a fluid petroleum derivative and an enclosing pipe for conveying a dielectric gas.

3,743,855

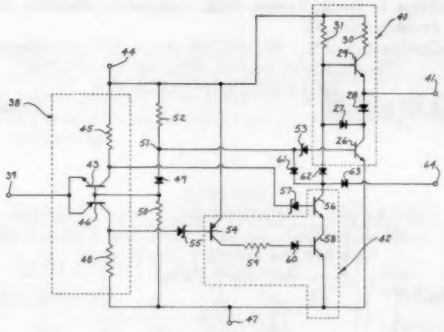
FAULT DETECTING AND FAULT PROPAGATING LOGIC GATE

Odo J. Struger, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed June 10, 1971, Ser. No. 151,674

Int. Cl. H03k *19/36, 19/40;* H02h *7/20*

U.S. Cl. 307—215 **11 Claims**



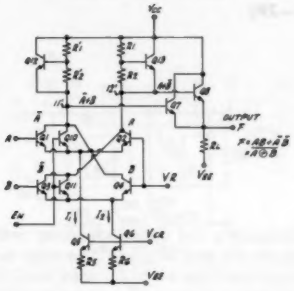
A logic gate has a fault sensing circuit connected to each of its input terminals and connected to actuate a switching means that open circuits the gate output terminal when there is no current flow either into or out of each gate input terminal. A first embodiment includes a photosensitive type current sensing circuit connected to the input terminal of a NOT gate. When a fault occurs at this terminal, a switching transistor actuates to turn off two drive transistors in a buffer circuit, which open circuits the output terminal. A second embodiment is similar but includes a transistor type current sensing circuit connected to the input terminal of a NOT gate. A third embodiment includes two fault sensing circuits connected to each of two input terminals of a NAND gate. Each fault sensing circuit connects to turn off the two drive transistors in a buffer circuit when a fault occurs at either input terminal. And finally, a fourth embodiment includes a fault sensing circuit connected to each of two input terminals of an AND gate, each circuit connected to deenergize a relay coil which opens a switch in the gate output terminal when a fault occurs at either input terminal.

3,743,856

EXCLUSIVE-OR ECL LOGIC CIRCUIT

Dale H. Leuthold, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed July 6, 1971, Ser. No. 159,700
Int. Cl. H03k *19/32*
U.S. Cl. 307—216 4 Claims



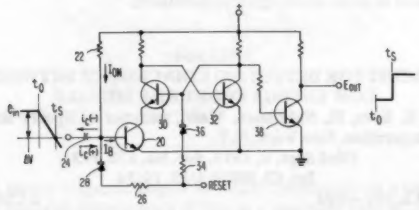
An Exclusive OR circuit for emitter coupled logic (ECL) arrays having two differential current switches with their respective collectors either cross coupled to provide an inverted Exclusive OR output from a negative logic convention.

3,743,857

SENSITIVE THRESHOLD SIGNAL DETECTOR CIRCUIT

Richard L. Fussell, Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 68,177, Aug. 31, 1970, Pat. No. 3,659,208.
This application Feb. 7, 1972, Ser. No. 224,044
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R 5 Claims



A threshold detector circuit is disclosed which is capable of receiving an input signal of varying amplitude and of generating an output signal indicative of the passage of said input signal through a predetermined threshold level. The present circuit is especially useful in high sensitivity applications and employs a threshold switch in combination with a full latch circuit to provide a storage action. Once the latch has been set through the action of the threshold switch, it is necssary to utilize an external reset control signal to return the latch and the corresponding detector output level to its steady state condition.

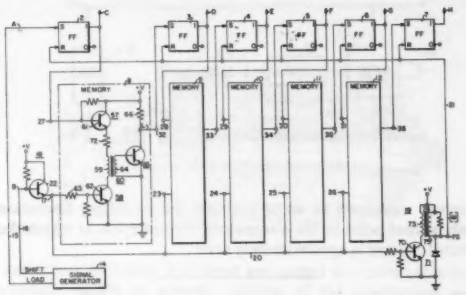
3,743,858

SHIFT REGISTER

David H. Woods, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1971, Ser. No. 186,107
Int. Cl. G11c *11/40*
U.S. Cl. 321—221 R 3 Claims

A shift register is comprised of a plurality of bistable devices with the output of a given bistable device being coupled to the input of the following bistable device by way of a memory circuit which stores a signal indicative of the binary state of the given bistable device in response to the concurrent provision of a shift signal. A reset pulse for each stage of the shift register is also provided in response to the provision of the shift signal. The memory device stores the binary signal for a



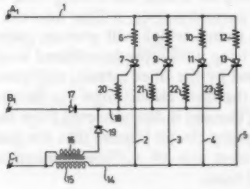
predetermined interval of time after the cessation of the reset signal, so that the following bistable device may be set to the same binary state that the given bistable device was in prior to the provision of the reset signal.

3,743,859

ELECTRIC SWITCHING DEVICE INCLUDING THYRISTORS

Emil August Exner, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 221,000
Claims priority, application Netherlands, Feb. 11, 1971, 7101794
Int. Cl. H03k *17/56*
U.S. Cl. 307—252 K 4 Claims



An electric switching device which includes at least two thyristors connected in parallel across a pair of supply conductors. The primary winding of a transformer is connected in one supply conductor and the secondary winding (or windings) is connected to the thyristor control electrodes. When one thyristor conducts it causes a current flow in said primary winding thereby inducing a control pulse in the secondary winding that in turn triggers the remaining thyristors into conduction. The device prevents an overload on the first thyristor to conduct.

3,743,860

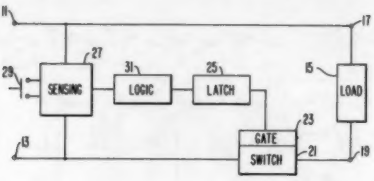
FULL CYCLE SYNCHRONOUS-SWITCHING CONTROL CIRCUIT

Allen J. Rossell, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 16, 1971, Ser. No. 181,110
Int. Cl. H03k *17/66, 17/68, 17/72*
U.S. Cl. 307—252 UA 19 Claims

A synchronous-switching circuit for a gate-controlled bidirectional switch controls the flow of power between an alternating current source and a load. The application of a gate-biasing potential at the gate of the bidirectional switch is controlled by a latch-operated reed relay which is "set" and

"reset" by a network of logic gates fed by sensing transistors responsive to the random actuation of a power-on/power-off switch and to a predetermined zone or point in the alternating



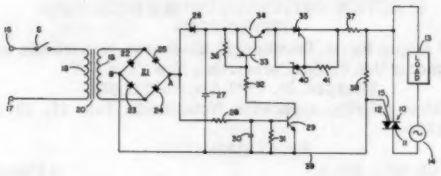
current waveform so as to perform the switching operation only at that point in the alternating current cycle at which the circuit current is approximately zero.

3,743,861

THYRISTOR HARD-FIRING CIRCUIT

Lester N. Bolmgren, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 26, 1971, Ser. No. 202,421
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 B **7 Claims**



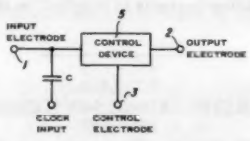
A gating circuit for a load controlling triac which comprises an alternating current source, a filter network for providing a DC voltage, a switch which will prevent gating signals being applied to the triac until a predetermined level of voltage has been established by the filter circuit, and a second switch for disconnecting the filter circuit from the first switch whenever the alternating current is disconnected from the filter network whereby the gating circuit insures that the gating signals supplied to the triac are of sufficient magnitude to prevent damage to that triac.

3,743,862

CAPACITIVELY COUPLED LOAD CONTROL

Antony Geoffrey Bell, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 19, 1971, Ser. No. 173,202
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **3 Claims**



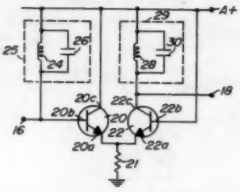
Disclosed is a high speed electronic drive circuit integrated on a monolithic chip, utilizing capacitive coupling for selective nodal biasing. The circuit selectively superpositions a higher voltage upon preselected nodes to increase the drive capacity of the device by driving it into a more conductive state. The circuit also provides for faster propagation times by providing for higher input voltages at preselected nodes through capacitive coupling.

3,743,863

TRANSISTORIZED ELECTRONIC CIRCUIT EMPLOYING RESISTORLESS BIAS NETWORK

Francis H. Hilbert, Addison, and Arthur F. Seymour, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 3, 1971, Ser. No. 195,335
Int. Cl. H03k *17/00*
U.S. Cl. 307—296 **13 Claims**



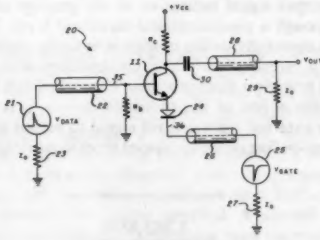
Transistorized differential circuits include a biasing system that substantially reduces the need for resistors in the base circuits of the transistors being biased. An inductor coupled between the base of one of the transistors and a power supply forward biases the base-emitter junction of the transistor, and the other base is coupled to the same point of the power supply to bias the transistor so that the voltages at the bases of the transistors are substantially equal to each other, and are at substantially the voltage of the power supply to which the inductor is connected. This technique is applicable to balanced or unbalanced differential transistor circuits, and may be employed in amplifiers, mixers, limiters, multipliers and oscillators and in other small signal applications.

3,743,864

CIRCUIT FOR DETECTING COINCIDENCE BETWEEN LOW ENERGY SHORT RISE SIGNALS

Ellis E. Eves, II, Nabnasset, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,993
Int. Cl. H03k *3/26, 19/24*
U.S. Cl. 307—302 **5 Claims**

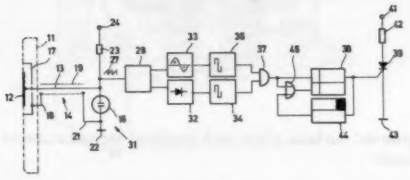


A circuit for detecting coincidence between a short pulse signal and a gating signal comprises an avalanche transistor with a fast switching diode connected in series with the base emitter diode thereof. The short pulse signal and the gating signal are applied to the base emitter diode of the avalanche transistor and to the fast switching diode respectively.

3,743,865
PROXIMITY SWITCH

Wilhelm Riechmann, Ahornweg 31, 715 Backnang, Germany

Continuation-in-part of Ser. No. 831,609, June 9, 1969, abandoned. This application Dec. 29, 1971, Ser. No. 213,700
Int. Cl. H03k 17/00
U.S. Cl. 307—308 12 Claims

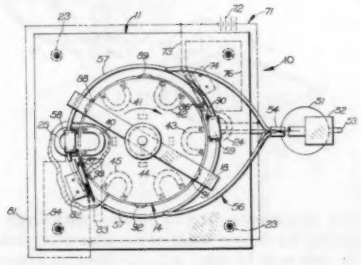


A capacitive proximity switch has a proximity electrode designed as an antenna. The signal from the electrode detunes an oscillator. Discrimination of the oscillated signal operates a bistable flip-flop to cause a thyristor in a load circuit to conduct and operate the coil of a magnetic valve.

3,743,866
ROTARY CURIE POINT MAGNETIC ENGINE

Anton Pirc, 521 Delores St., San Francisco, Calif.

Filed July 24, 1972, Ser. No. 274,306
Int. Cl. H02n 7/00
U.S. Cl. 310—4 10 Claims



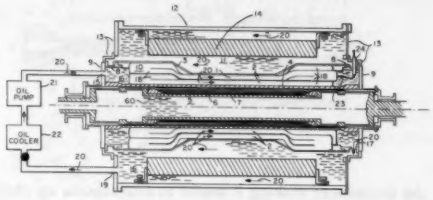
A rotary magnetic engine in which Gadolinium as a transition material distorts lines of flux in a magnetic field to cause relative movement between a rotor and a stator. Magnets are mounted on the rotor and stator, and the Gadolinium metal is disposed in to form of thin spaced-apart laminae between the poles of certain ones of the magnets with passageways formed between the laminae for directing the flow of a coolant fluid. Circuit means is provided to intermittently direct an electrical current through the laminae responsive to movement of the rotor with respect to the stator. This causes the temperature of the laminae to rise above the Curie point of Gadolinium whereby the lines of flux are released from the laminae to create magnetic attraction between opposed magnets to move the rotor. Thereafter the circuit means is opened to permit the coolant medium to cool the laminae below the Curie point so that the lines of flux are captured by the fluxdistorting means.

3,743,867
HIGH VOLTAGE OIL INSULATED AND COOLED ARMATURE WINDINGS

Joseph L. Smith, Jr., Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 20, 1971, Ser. No. 210,088
Int. Cl. H02k 9/00
U.S. Cl. 310—52 10 Claims

The armature of a high-voltage electrical generator or motor is contained in a chamber which also contains transformer oil or other suitable insulating and cooling fluid. The oil immerses the armature winding and provides protection against corona and flashover. The oil is also circulated through the chamber and along, across and over the armature

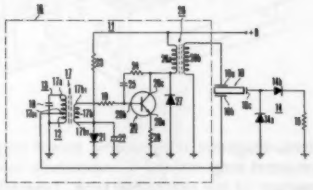


conductors including if desired associated structure such as a magnetic shield to provide cooling of the conductors and structure. An oil pump and oil cooler external to the chamber provide a closed oil circulating system.

3,743,868
DRIVING APPARATUS FOR PIEZOELECTRIC CERAMIC ELEMENTS

Takehiko Kawada, Naka-ku, Kanagawa Prefecture, Yokohama Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Filed Oct. 12, 1971, Ser. No. 188,299
Claims priority, application Japan, Oct. 12, 1970, 45/89811; Dec. 25, 1970, 45/116287
Int. Cl. H04r 17/00
U.S. Cl. 310—8.1 8 Claims



In apparatus for driving a piezoelectric ceramic element by applying a driving voltage across a pair of driving electrodes of the ceramic element, there are provided a phase detector connected to one driving electrode for detecting the phase of the current flowing through the ceramic element as a voltage phase, an amplifier connected to the other driving electrode for supplying thereto a driving voltage, and a phase shifter to positively feed back the output from the phase detector to the amplifier for coinciding the voltage phase and the current phase of the ceramic element so as to drive the same at the most suitable driving frequency.

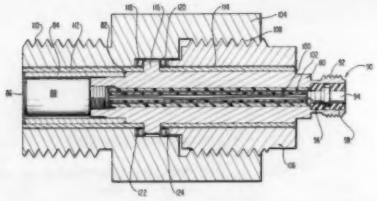
3,743,869
TRANSDUCER WITH GROUND ISOLATION

Hans W. Hugli, Williamsville, N.Y., assignor to Kistler Instrument Corporation, Clarence, N.Y.

Continuation of Ser. No. 862,381, Sept. 30, 1969. This application Mar. 3, 1971, Ser. No. 120,777
Int. Cl. H04r 17/00
U.S. Cl. 310—8.4 1 Claim

Disclosed is a piezoelectric transducer which is isolated from ground by a rigid metallic insulator to improve the high frequency response of the transducer. The insulator takes the form of an aluminum or aluminum alloy ring or sleeve that is

coated with an aluminum oxide. The oxide coating is electrically insulating but hard and rigid to provide a rigid mount for the transducer making it useful at frequencies up close to its natural resonant frequency.

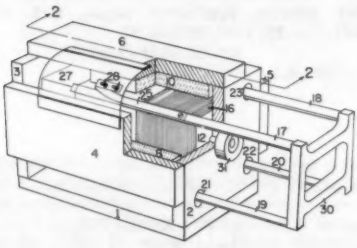


3,743,870

MOVING COIL LINEAR ACTUATOR

Frederick C. Hunt, Anaheim, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.

Continuation of Ser. No. 141,879, May 10, 1971, abandoned.
This application June 28, 1972, Ser. No. 266,862
Int. Cl. H02k 41/02
U.S. Cl. 310—13 10 Claims



An electo-magnetic reciprocable motor employing plural slab permanent magnets and an essentially rectangular magnetic structure of the center-gap type. Typically, a square or rectangular drive coil of plural turns surrounds a central leg of the magnetic structure and is influenced by flux on all four sides. A single shorted-turn coil is stationary upon the central leg and is shorter than the central leg to provide reduction of inductance and damping. Longitudinal space is provided between each magnet to accommodate a mechanical take-off structure of stems attached to the drive coil and external electrical conductors connected thereto. A shorter single-ended version of the motor is also possible.

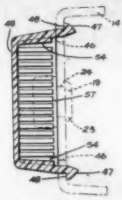
3,743,871

DYNAMOELECTRIC MACHINE LUBRICANT STORAGE ARRANGEMENT

Ralph E. Church, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 16, 1972, Ser. No. 226,923
Int. Cl. H02k 5/16
U.S. Cl. 310—90 12 Claims

A dynamoelectric machine is disclosed comprising a stator, a shaft having a rotor fixed thereto, and a bearing supporting the rotor shaft for rotation with respect to the stator. A lubricant retaining reservoir is mounted in spaced relation laterally about the bearing. A lubricant absorbent mass is mounted within the lubricant retaining reservoir flush with the bearing from which mass lubricant may be supplied to the bearing. A grooved surface is disposed within the reservoir to receive excess lubricant from lubricant saturated portions of the mass in contact with the grooved surface and from which excess lubricant may be resupplied to portions of the mass in contact with the grooved surface when such portions are unsaturated with lubricant.

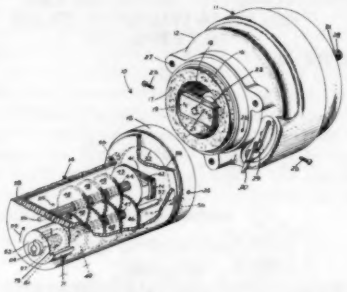


3,743,872

DYNAMOELECTRIC MACHINES AND ASSEMBLY OF SAME WITH A CONTROL DEVICE

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 7, 1972, Ser. No. 223,916
Int. Cl. H02k 5/16
U.S. Cl. 310—90 12 Claims



Assembly of a device such as a timer particularly adapted for controlling the defrost cycle of a refrigerator, and an electric motor that may be used, e.g., to drive an evaporator or condenser cooling fan. Control device and motor detachably secured and magnetically coupled to one another. Speed reducing gear train is mechanically driven from the control device input member and a switch actuator cam cyclically causes selective opening and closing of switch contacts. Control device may be enclosed to prevent the admission of foreign matter. Unit bearing type of motor includes a polarized magnetic body that forms part of the rotor assembly and is rotatable within a lubricant reservoir of the motor. Oil reservoir cover is formed of a non-ferromagnetic material. The polarized magnetic body establishes a magnetic field that extends beyond the confines of the motor and causes similar movement of a polarized magnetic body in the control device. The control device and motor are modular units and may be manufactured and transported as individually complete or assembled components.

3,743,873

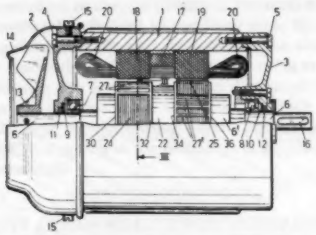
SYNCHRONOUS ELECTRIC MACHINE

Henricus Cornelis Johannes de Jong, Hengelo, Netherlands, assignor to Heemaf N.V., Hengelo, Netherlands

Filed Dec. 20, 1971, Ser. No. 209,614
Claims priority, application Netherlands, Jan. 22, 1971, 7100855
Int. Cl. H02k 19/12
U.S. Cl. 310—165 7 Claims

A synchronous electric machine having a stator is provided with a polyphase winding producing a rotating magnetic filed

and an annular D.C. winding to produce a coaxial steady field. Sets of rotor poles are disposed in axially spaced transverse planes and permanent magnets consisting of ceramic material of high coercivity and having radially inner and outer faces of



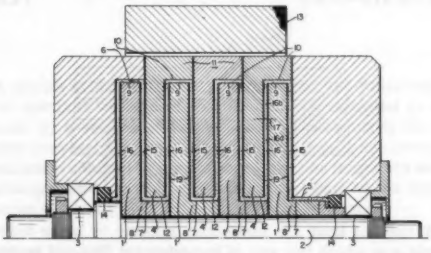
opposite polarity are disposed in each transverse plane between the poles, the polarity of the radially outer faces of the permanent magnets being opposed to that induced in adjacent poles by the D.C. winding.

3,743,874

HOMOPOLAR MACHINES WITH CONTACTS OF LIQUID METAL

Jean-Pierre Chabrerie, Saint-Michel-S/Orge, and Alain Jacques Maillert, Aulnay-sous-Bois, both of France, assignors to Anvar Agence Nationale De Valorisation De La Recherche, Neuilly-sur-Seine, France

Filed Nov. 18, 1971, Ser. No. 199,846
Int. Cl. H02k *31/00*
U.S. Cl. 310—178 **8 Claims**



Homopolar motors or generators in which electrical contacts are made by filling the space between the rotor and stator with a liquid metal and especially machines of this type with a plurality of discs. An annular liquid body with ends electrically joined to the peripheral and central contacts of a fixed counter disc is divided into two concentric annuluses, and one of these is rotated in the direction of rotation of the rotor. The other annulus automatically rotates in the opposite direction. The radial widths of these annuluses are so selected that the electromotive forces which are induced therein cancel each other and the centrifugal pressures offset and counterbalance the centrifugal pressure due to movable bodies of liquid having their ends at the terminals of the electric contacts of the corresponding movable discs.

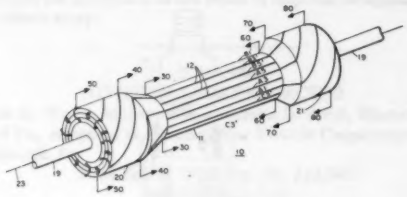
3,743,875

POLYPHASE SYNCHRONOUS ALTERNATORS HAVING A CONTROLLED VOLTAGE GRADIENT ARMATURE WINDING

Joseph L. Smith, Jr., Concord, and James L. Kirtley, Jr., Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 26, 1971, Ser. No. 166,083
Int. Cl. H02k *19/00*
U.S. Cl. 310—198 **29 Claims**

Polyphase synchronous alternators are described in which the armature conductors are wound to have a small voltage difference between most adjacent windings so that the conductors need to be insulated for this voltage. Regions of the armature winding where larger voltage differences exist are provided with additional insulation. The armature cross-section contains substantially more copper relative to insulation than



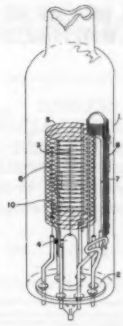
the conventional machine because of the reduced volume of insulation thereby increasing the economic terminal voltage of the machine. A cryogenic field winding produces the required magnetic flux without requiring armature teeth in which the armature conductors are placed as in a conventional machine.

3,743,876

HOT-CATHODE IONIZATION GAUGE HAVING ELECTRODE MEANS FOR SHAPING THE ELECTRIC FIELD IN THE VICINITY OF THE CATHODE

Paul A. Redhead, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottowa, Ontario, Canada

Filed Oct. 7, 1969, Ser. No. 864,487
Int. Cl. H01J *7/16*
U.S. Cl. 313—7 **4 Claims**



A hot-cathode ionization gauge of the Bayard Alpert type having a central ion collector, a cylindrical grid surrounding the ion collector, a cathode for producing electrons positioned outside the grid, and a cathode-shield which when carrying a suitable voltage will shape the electric field gradient in the vicinity of the cathode such that electrons produced by the cathode will be launched into paths generally towards the ionizing volume of the gauge defined by the grid.

3,743,877

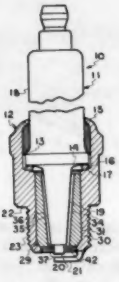
MULTIPLE HEAT RANGE SPARK PLUG

William P. Strumbos, 85 Middleville Road, Northport, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,176
Int. Cl. H01t *13/16*
U.S. Cl. 313—11.5 **5 Claims**

A spark plug that is provided with a heat shunt on the plug insulator nose arranged such that the characteristics of a "hot" plug are produced at lower operating temperatures and of a "cold" plug at higher operating temperatures. The heat shunt is a thermally conductive sleeve surrounding the insulator nose in the bore of the spark plug shell. A thermal gap

between the heat shunt and the plug insulator nose prevents heat transfer through the shunt at lower operating temperatures — there is thus a relatively long heat path into the engine cooling system and the firing end of the plug stays relatively hot to prevent fouling. At higher operating temperatures, the

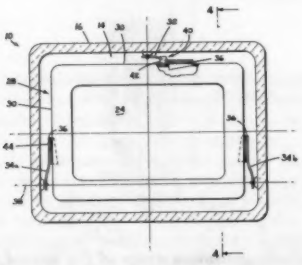


heat shunt expands thermally to bridge the gap to thereby shorten the heat path into the cooling system so that the relatively rapid heat conduction "cools" the firing end of the plug to prevent its overheating under high speeds and loads. The heat shunt can be used with air gap, surface gap, and other types of spark plugs.

3,743,878
PARALLEL BARRIER SUPPORTING SYSTEM HAVING SPRING MOVEMENT LIMITER

George R. Kautz, Seneca Falls, and Alan T. Kuryla, Geneva, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,691
Int. Cl. H01j *29/02, 29/06*
U.S. Cl. 313—85 S **6 Claims**



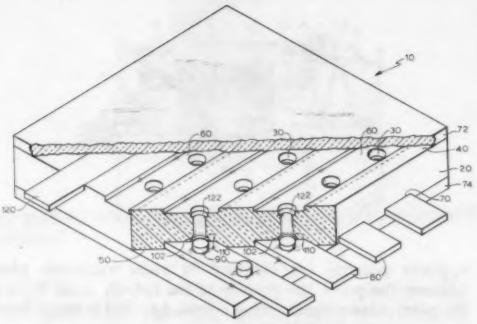
A three-point suspension system for parallax barriers wherein two of the supporting points inherently define a pivot plane and a retaining means is positioned adjacent the third supporting point for reducing the tendency of the barrier to pivot.

3,743,879
COLD CATHODE DISPLAY PANEL HAVING A MULTIPLICITY OF GAS CELLS

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 764,984, Oct. 2, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,320
Int. Cl. H05b *37/00*; H01j *1/62*
U.S. Cl. 313—108 B **44 Claims**

A flat display panel comprising a plurality of gas-filled light-producing cells, each having at least two electrodes for energizing the cell. The panel includes various structural features including projections on the electrodes which extend into the cells to aid in positioning the electrodes and maintaining alignment between the electrodes and cells, the shaping of the electrodes to achieve minimal leakage between cells, the provision

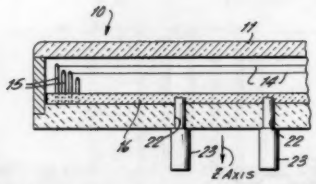


of structural features to minimize cathode sputtering, etc. Various arrangements are also described for generating different colors of light.

3,743,880
DUAL FILAMENT READOUT LAMP

Philip C. Demarest, Pine Brook, N.J., assignor to Refac Technology Development Corporation, New York, N.Y.

Continuation of Ser. No. 806,431, March 12, 1969, abandoned. This application May 6, 1971, Ser. No. 141,009
Int. Cl. H01k *9/00*; H01j *61/66*
U.S. Cl. 313—109.5 **1 Claim**

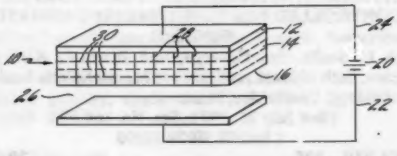


A readout lamp for producing numeric or alpha-numeric displays in which two sets of incandescent filament segments in parallel spaced relationship with each other are employed to produce a double lined number or letter. Failure of one or more filaments will still enable the lamp to produce an intelligible display. The two sets of filaments are slightly displaced vertically from each other to prevent electrical contact without destroying the substantially uniplanar appearance of the display.

3,743,881
SELF STABILIZING ELECTRODES

Paul R. Blaszuk, Marlborough, Conn., assignor to United Aircraft Corporation, Hartford, Conn.

Filed Sept. 9, 1971, Ser. No. 178,961
Int. Cl. H01j *17/06*
U.S. Cl. 313—217 **5 Claims**



An electrode is described for producing large scale, uniformly distributed glow discharges across a discharge re-

gion. The electrode consists of a layer of highly electrically conductive material and a bulk of homogeneous material, the latter having a current-voltage characteristic which is coordinated with the voltage-current characteristic of the discharge region. Any substantial increase in current density through a local area in the discharge region causes a concomitant concentration of current density in the section of the electrode immediately adjacent to the local area; the concentration in the electrode effects a reduction in the electric potential at the electrode surface which in turn reduces the current density through the local area in the discharge. The overall result is a self-compensating electrode in which the current density is self compensating and uniformly dispersed throughout, and arcing in the discharge is suppressed without external stimulus.

3,743,882

CIRCUIT ARRANGEMENT FOR GENERATING AN AMPLITUDE-MODULATED SAWTOOTH VOLTAGE

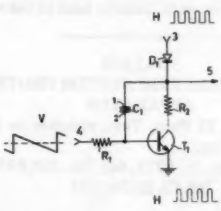
Klaus Kroner, Hamburg, and Hans-Heinrich Feindt, Schenefeld, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Oct. 6, 1971, Ser. No. 186,910

Claims priority, application Germany, Oct. 15, 1970, P 20 50 668.7

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **6 Claims**



A circuit arrangement for generating an amplitude-modulated sawtooth voltage of line frequency modulated in amplitude by a voltage of field frequency, particularly for the corner convergence in a colour television display apparatus. A capacitor is charged by a voltage pulse of line frequency and is discharged by a current which is proportional to the instantaneous value of a sawtooth voltage of field frequency.

3,743,883

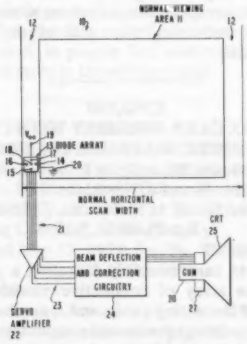
PHOTODIODE APPARATUS FOR REDUCING BEAM DRIFT OF A CATHODE RAY TUBE DISPLAY SYSTEM

Joseph Burns, Pequannock, N.J., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jan. 15, 1971, Ser. No. 106,751

Int. Cl. H01j *29/70*

U.S. Cl. 315—21 **5 Claims**



Apparatus for detecting and correcting drift and position errors of an electron beam due to electrical transients or mechanical vibration in a cathode ray tube display system including a diode array located in the path of the scanning electron beam. When the beam is properly directed, a predetermined output signal matrix from the diode array indicates that the beam is on target; if the beam drifts, a different output signal matrix indicates such drift and a servomechanism coupled to the diode array and to the beam deflection circuitry corrects the deflection of the beam in response to signals from the diode array.

3,743,884

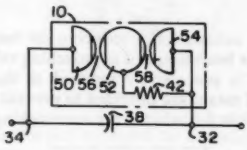
OVERVOLTAGE PROTECTOR

John A. Wafer, Monroeville, and John D. Borst, Sharon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1972, Ser. No. 222,941

Int. Cl. H02h *7/16*

U.S. Cl. 315—36 **9 Claims**



Protection apparatus for a capacitive means which is effectively connected in series with a power transformer. A first spark gap and a resistance are serially interconnected and the combination is connected in parallel with the capacitive means. A second spark gap is connected in parallel with the resistance. The first spark gap is constructed to arc at a lower voltage than the second spark gap. With this apparatus, ferroresonance is dampened without an overvoltage surge on the capacitive means.

3,743,885

ROAD VEHICLE LIGHTING SYSTEMS

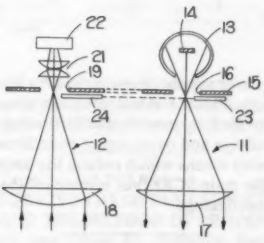
Harris Vernon Hicks, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 15, 1971, Ser. No. 180,815

Claims priority, application Great Britain, Sept. 18, 1970, 44,604/70

Int. Cl. B60q *1/08*

U.S. Cl. 315—82 **4 Claims**

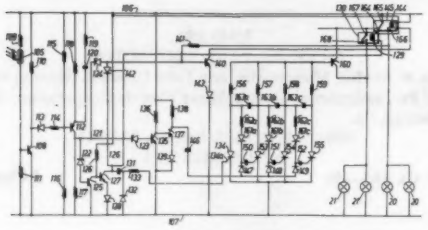


A road vehicle lighting system has a first projector-receiver unit wherein the projected light beam can be cut off from the left-hand side and a second projector receiver unit wherein the projected light beam can be cut off from the right-hand side. The first and second units are mounted at the right hand and left-hand side of the vehicle respectively and there are a pair of light sources mounted at the left and right-hand side of the vehicle respectively. This overall arrangement produces an improved light pattern in the front of the vehicle.

3,743,886
VEHICLE LIGHTING

Jean Paul Cretien, 3, rue Sophie, Saint Leu La Foret, France

Filed Apr. 21, 1971, Ser. No. 135,832
Claims priority, application France, Apr. 5, 1970, 7011903; Apr. 22, 1970, 7014609
Int. Cl. B60q 1/08, 1/14; H05b 37/02
U.S. Cl. 315—83 4 Claims

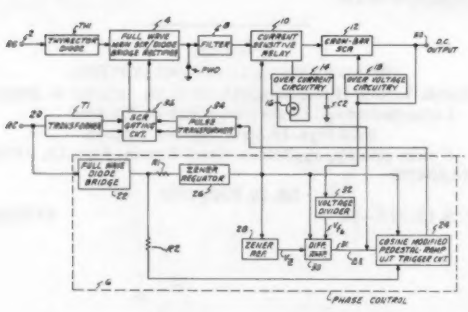


A system for automatically reducing the intensity of light emitted from the head lamps of approaching vehicles. The intensity of light is successively reduced as the vehicles approach. Control means are provided to prevent an increase in light intensity while the vehicles are approaching.

3,743,887
POWER SUPPLY FOR AN ELECTRONIC PABX

Timothy James Keough, Woodridge, and Charles James Kalensky, Chicago, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 36,942, May 13, 1970, abandoned.
This application Mar. 24, 1972, Ser. No. 237,973
Int. Cl. H02h 3/38
U.S. Cl. 317—16 5 Claims



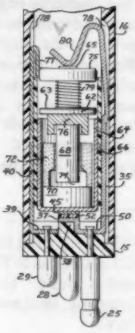
A compact power supply characterized by low heat dissipation is provided. Phase control of main silicon controlled rectifiers is provided by cosine modified ramp and pedestal control. Overvoltage and overcurrent conditions are detected by SCRs and relay means which reduce the amplitude of control signals to the main SCRs thus turning off the output of the system to prevent damage.

3,743,888
LINE PROTECTOR FOR A COMMUNICATION CIRCUIT

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Aug. 24, 1972, Ser. No. 283,492
Int. Cl. H02h 3/38
U.S. Cl. 317—16 10 Claims

A plug-in line protector for a communications circuit provides protection for overvoltage and overcurrent conditions of the line. A module containing carbon blocks provides an air gap in an overvoltage shunt circuit for grounding high voltage transients. For an overcurrent condition in that shunt circuit, a solder pellet melts causing contacts in an overcurrent shunt circuit to engage and ground the line. The protector also has

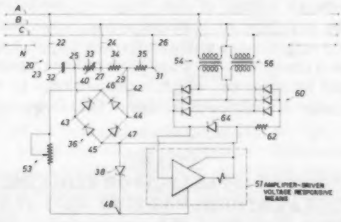


an overcurrent responsive mechanism in the form of a heat coil in the line. When the coil is heated, it melts the solder pellet and closes the contacts in the overcurrent shunt circuit. One of those contacts is a bobbin around which the heat coil is wrapped and which serves to transfer heat to the solder pellet.

3,743,889
POLYPHASE ELECTRIC SYSTEM PROTECTIVE APPARATUS

Manlio Lopez-Batiz, El Paso, Tex., assignor to Hatch Incorporated, El Paso, Tex.

Filed Dec. 16, 1971, Ser. No. 208,881
Int. Cl. H02h 3/32
U.S. Cl. 317—27 R 19 Claims



Circuit means are connected across the phase conductors of a polyphase electric system to output a voltage responsive to the positive- or negative-sequence components of voltage in the system. The output voltage is provided to voltage-responsive means for interrupting the polyphase system, activating a warning device, indicating the value of the voltage components, or the like.

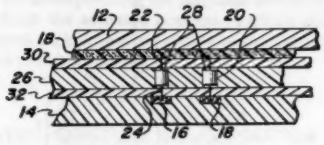
3,743,890
DIODE MATRIX CARD ASSEMBLY WITH CONDUCTIVE ELASTOMERIC MATERIAL CONNECTORS

John P. Neu, Berkeley, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 3, 1972, Ser. No. 215,001
Int. Cl. H05k 7/12
U.S. Cl. 317—101 CP 8 Claims

A diode matrix card assembly including a pair of printed wiring cards, an array of conductive elastomeric material strips on each of the wiring cards, and a number of diodes intermediate the cards and positioned normal thereto, with each of the diode leads insertably engaging the respective conductive elastomeric strip on each side of the diode during as-

sembly for mechanically mounting and electrically connecting the diodes in the assembly. The conductive elstomeric materi-



al strips are mounted in a crossing grid array so that they also serve as selection conductors in the assembly.

3,743,891

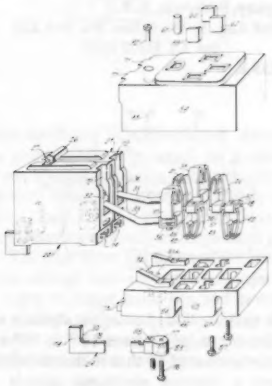
PLUG-IN RECEPTACLE-CIRCUIT BREAKER DEVICE HAVING UNITARY HOUSING

Aldon Buxton, Stone Mountain, Ga., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 9, 1971, Ser. No. 169,949

Int. Cl. H02b *1/04*

U.S. Cl. 317—119 **15 Claims**



A very flexible electric service panel for temporary hookups is constructed to receive plug-in circuit breakers for direct wiring, as well as four prong receptacle type plug-in power outlet fittings for making cord set connections. The power outlet fitting is constructed by utilizing a hook-like member to mechanically hold a subassembly and a receptacle together as a unitary structure. The subassembly consists of two single pole circuit breakers stacked side by side. The receptacle is adjacent to the load end of the subassembly and electrically connected to the load terminals of the breakers. Plug-in type neutral and grounding connectors at the rear of the receptacle engage forwardly extending legs of neutral and ground busses in the service panel, as plug-in line terminals of the breakers engage energized stabs in the service panel.

3,743,892

CLOSURE MEANS FOR UNOCCUPIED CIRCUIT BREAKER OPENING IN A PANEL BOARD

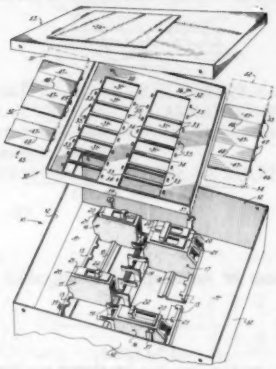
Edward J. Fritz, Florence, and William H. Middendorf, Fort Mitchell, both of Ky., assignors to The Wadsworth Electric Manufacturing Company, Covington, Ky.

Filed May 15, 1972, Ser. No. 253,517

Int. Cl. H02b *1/06*

U.S. Cl. 317—120 **11 Claims**

A circuit breaker enclosure is provided with a dead front panel having openings corresponding to possible circuit breaker positions. A segmented filler plate comprises a plurality of separable segments, each being of greater dimension than the openings in the dead front. Individual ones of the segments or any combination thereof are separated from the filler plate and are positively secured over respective dead front



openings which are not occupied by a circuit breaker. The combination of the occupying breakers and the secured segments of the filler plate cooperate to effectively seal the dead front and thus the enclosure.

3,743,893

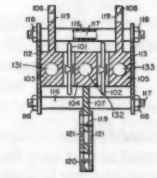
FLUID COOLED COMPRESSION BONDED SEMICONDUCTOR DEVICE STRUCTURE

Isamu Yamomoto, Takarazuka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 808,874, March 20, 1969, abandoned. This application May 27, 1971, Ser. No. 147,320

Int. Cl. H01*1 3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



This disclosure relates to a semiconductor device structure in which a plurality of semiconductor devices are held in a compressive relationship by resilient plates.

3,743,894

ELECTROMIGRATION RESISTANT SEMICONDUCTOR CONTACTS AND THE METHOD OF PRODUCING SAME

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to Motorola, Inc., Frankling Park, Ill.

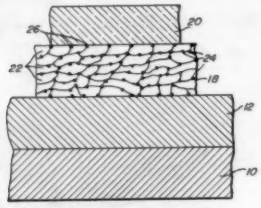
Filed June 1, 1972, Ser. No. 258,620

Int. Cl. H01*1 3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**

A technique of reducing the susceptibility of aluminum semiconductor contacts to electromigration. Aluminum contacts containing a small percentage of copper therein are formed on a semiconductor device by evaporation techniques. Subsequently the device is heated to a temperature of greater than 400° to alloy the copper into the aluminum and quickly

cooled to form copper rich precipitates between the grains of aluminum along the grain boundaries and triple points thereof



for the purpose of reducing electromigration along grain boundaries.

3,743,895

COPPER PLATED BASE PLATE WITH NICKEL PLATED INSERT FOR SEMICONDUCTOR COMPONENT HOUSING

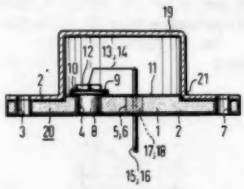
Heinz Klunker, Parsberg, and Martin Rauch, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 7, 1971, Ser. No. 205,631

Claims priority, application Germany, Dec. 10, 1970, P 20 60 933.0

Int. Cl. H01l 5/00, 3/00

U.S. Cl. 317—234 R 7 Claims



A base plate for semiconductor component housings. The base plate is characterized in that only the portion of the base plate, to which the semiconductor is soldered, is nickel plated while the remainder is copper plated.

3,743,896

SEMICONDUCTOR COMPONENT STRUCTURE FOR GOOD THERMAL CONDUCTIVITY

Wolfgang Weiske, and Herbert Vogt, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

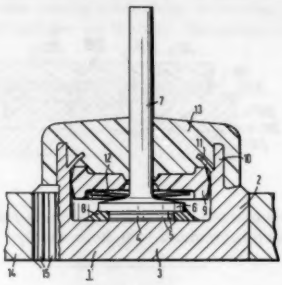
Continuation of Ser. No. 66,746, Aug. 25, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,682

Claims priority, application Germany, Sept. 2, 1969, P 19 44 515.9

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R 1 Claim

The cover of a cup-shaped housing of electrically and thermally conductive material which encloses a semiconductor body in a gas-tight manner is supported in the housing in a manner whereby the surface of the cover farther from the semiconductor body is at least as high as the outer height dimension of the side wall of the housing. This permits good heat conductivity to an assembly part in a recess of which the



housing is pressed, without adverse effect on the synthetic material of the cover.

3,743,897

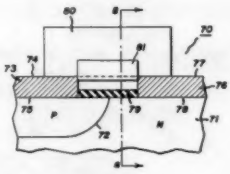
HYBRID CIRCUIT ARRANGEMENT WITH METAL OXIDE VARISTOR SHUNT

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,220

Int. Cl. H01l 9/00

U.S. Cl. 317—235 R 25 Claims



A metal oxide varistor body having an alpha in excess of 10 in the current density range of from 10^{-3} to 10^{2} amperes per square centimeter is located so that it shunts laterally spaced electrodes across a discrete electronic circuit module. A dielectric may be located in the conduction gap between the electrodes. Either the electronic circuit module or the varistor body may be the substrate.

3,743,898

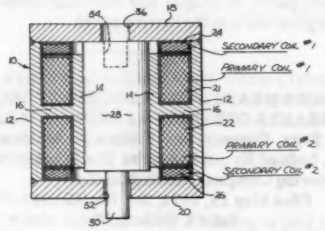
LATCHING ACTUATORS

Oded Eddie Sturman, 18643 Kirkcolm Land, Northridge, Calif.

Continuation-in-part of Ser. No. 24,282, March 31, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,365

Int. Cl. H01h 47/04

U.S. Cl. 317—154 19 Claims



Latching devices which utilize the residual magnetism retained in the relatively soft magnetic materials of the magnetic curcuit for its latching force. The actuators are propor-

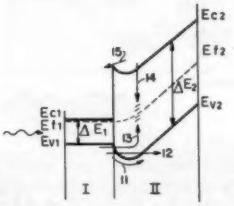
tioned so as to have a minimum effective air gap in the actuated position to achieve a high latching force without the use of a permanent magnet in the magnetic circuit. A means is provided for demagnetizing the magnetic circuit to release the actuator from the actuated position. Various configurations are disclosed, including some ideally suited for use with a simple remote switching means.

3,743,899

RADIATION-SENSITIVE SEMICONDUCTOR TARGET FOR A CAMERA TUBE

Michel Berth, Antony; Francois Desvignes, Bourg-la-Reine, and Claude Piaget, Yerres, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,570
Claims priority, application France, Dec. 10, 1970, 7044472
Int. Cl. H011 *15/00*
U.S. Cl. 317—235 R **4 Claims**



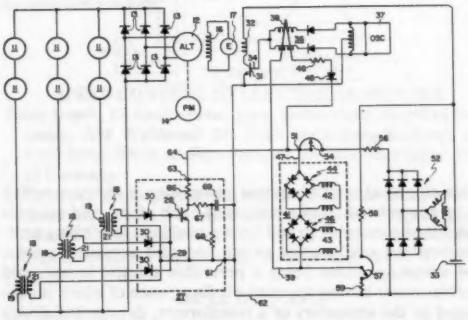
A radiation-sensitive semiconductor device particularly suitable as a photoconductive target for a camera tube sensitive to long wavelength radiation is constituted by a first layer of semiconductor material having a relatively small band gap, i.e., less than 1.5 eV and a superimposed layer of a semiconductor material having a relatively large band gap, i.e., greater than 1.5 eV. The first layer upon absorbing the incident radiation, generates charge carriers which are injected into the superimposed layer of larger band gap and hence of greater resistivity. The surface of the second layer may then be scanned by an electron beam in conventional manner to derive an output signal indicative of the radiation image impinging on the first layer.

3,743,900

SUPPLEMENTAL WHEEL-SLIP CONTROL SYSTEM

August V. Johansson, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Mar. 21, 1972, Ser. No. 236,685
Int. Cl. H02p *5/52*
U.S. Cl. 318—52 **7 Claims**



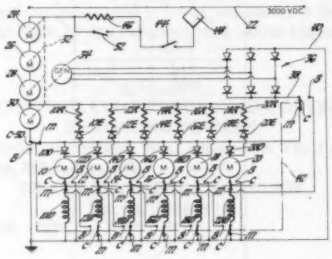
A supplemental system for rapid response, wheel-slip control of a traction vehicle. A reduction in the motor armature current, brought about by the acceleration of a traction motor driving a pair of slipping wheels, generates a signal which is used to temporarily reduce power to the motor and prevent further slippage. Since the motor currents are high at low speeds, the sensitivity is greatest, and rapid correction response is obtained at low vehicle speeds. At higher speeds, the motor current is less, and a supplemental system is desirable.

3,743,901

LOCOMOTIVE EXCITATION AND REGENERATIVE BRAKING CONTROL ARRANGEMENT

Lauren L. Johnson, Westchester, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1971, Ser. No. 198,771
Int. Cl. H02p *3/00*
U.S. Cl. 318—87 **3 Claims**



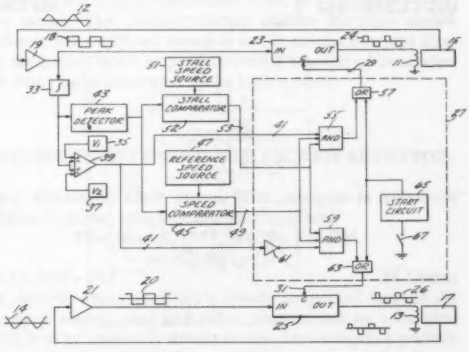
An electric locomotive is provided with drive motors driving a generator whose rectified output is combined with the current supplied the drive motors to power the locomotive's tractional motors. Regenerative braking is effected when the tractional motors are operated as generators to power one of the drive motors which in turn drives the other drive motors as generators to return power to the supply line. The current supplied by the several tractional motors to the powered drive motor is balanced by including, in alternative embodiments, resistors or feedback in the tractional motor circuits.

3,743,902

BRUSHLESS DC MOTOR

William L. Perkins, III, Springfield, Mass., and David C. Fisk, Enfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 9, 1972, Ser. No. 261,209
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **6 Claims**



Hall sensors mounted upon the armature of a two phase torque motor provide sensor voltages indicative of the relative

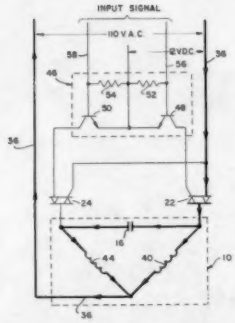
positions of each of two armature windings with respect to poles of the rotor. A speed comparator provides a signal when the motor's speed is below a desired speed. In concurrent response to the signal from the comparator and the sensor voltages, each winding has voltages applied thereto only when each is in a region of maximum flux of the rotor.

3,743,903

SINGLE PHASE MOTOR REVERSING STARTER

Robert Horn, Richardson, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed Nov. 12, 1970, Ser. No. 89,188
Int. Cl. H02p 1/42
U.S. Cl. 318—207 A **1 Claim**



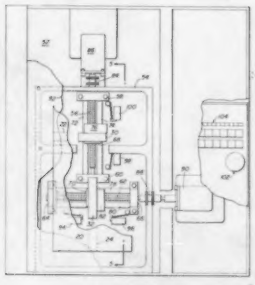
A single phase energized AC motor having a running capacitor connected across V-connected windings thereof for normal operation of the motor, is provided with a solid state single phase starter circuit for energizing the motor in a desired direction of rotation. The starter circuit includes transistor-fired triacs for connecting one line of the alternating current input circuit to the motor and to a corresponding terminal of the capacitor.

3,743,904

PRECISION POSITIONING MECHANISM, PARTICULARLY FOR POSITIONING TEST PROBES AND THE LIKE WITH RESPECT TO MICRO-ELECTRONIC UNITS

Mordechai Wiesler, Lexington, and David T. Hunt, Tewksbury, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.

Filed May 1, 1972, Ser. No. 249,246
Int. Cl. B23q 3/18; G05b 11/18
U.S. Cl. 318—162 **15 Claims**



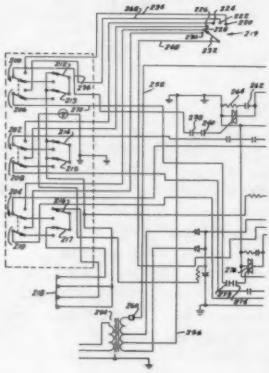
An X,Y movement for positioning test probes or the like with respect to micro-electronic units, comprises a support plate having at its under face (1), a pair of perpendicularly related guideways disposed along X and Y axes and (2), a pair of elongated slides, each being received by and slidable in one of the guideways but each being carried for movement only in a direction perpendicular to the guideway in which it slides. The arrangement is such that movement of the slide in the X guideway causes movement of the plate under the constraint of the slide in the Y guideway and movement of the slide in the Y guideway causes movement of the plate under the constraint of the slide in the X guideway.

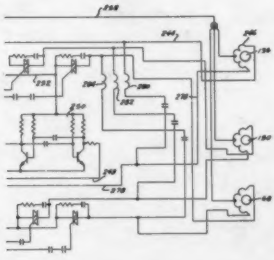
3,743,905

ADJUSTABLE HOSPITAL BEDS

Robert Goodman, 5325 Westminster Avenue, Philadelphia, and David G. Kilpatrick, 333 Bryn Mawr Avenue, Bala Cynwyd, both of Pa.

Division of Ser. No. 889,545, Dec. 31, 1969, Pat. No. 3,644,945. This application Sept. 14, 1971, Ser. No. 180,443
Int. Cl. H02p 7/38
U.S. Cl. 318—227 **2 Claims**





An electrical control system comprising a selector switch and a control switch in circuit with each other, said selector switch being movable to and from a position establishing a circuit between said control switch and said actuating means, said actuating means being a reversible electric motor, said electric motor having opposed windings, each of which is connected to the secondary of a transformer, the control circuit from each winding to the transformer, including a bi-directional gate, said gate being in circuit with a high frequency generator and with at least one capacitor interposed between said gate and said control switch.

3,743,906
DRIVING SYSTEM COMPRISING A RELUCTANCE MOTOR HAVING BOTH POSITION AND SPEED FEEDBACK

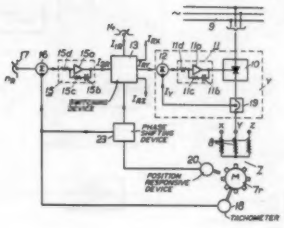
Vilmos Torok, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 25, 1970, Ser. No. 92,729

Claims priority, application Sweden, Nov. 26, 1969, 16232/69

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **2 Claims**



A reluctance motor has a stator with a plurality of stator pole bodies arranged circumferentially one after the other and supporting a body and a rotor with a plurality of rotor poles arranged circumferentially one after the other, so that a given turning movement of the rotor causes the permeance between a stator pole and a rotor pole to increase from a minimum value to a maximum value upon half the movement, and then to decrease progressively to the minimum value. The winding is connected to a current source, the voltage of which during motor operation is synchronized in such a way that the average value of the current flowing through the winding while the permeance is increasing is greater than while it is decreasing.

The current source is a controlled semiconductor converter connected between a network and a winding and which forms a part of a controlled circuit and delivers a direct current. A current comparison device which controls the converter compares the difference between the current flow through the converter and a varying reference value. This varying reference value is furnished by the combination of a constant reference value and a second reference value, the supply of which is controlled by a switching device operating synchronously with the rotation of the motor. The reference value supplied to the switching device is a combination of a predetermined reference value and a value dependent on the speed of rotation. A phase-advancing circuit is provided to advance the operation of the switch means proportionately to the speed of rotation.

3,743,907
SPEED CONTROL OF ELECTRICAL MOTORS

Peter Dosch, 15 Rankstrasse, Jona, Switzerland; Manfred Oehmann, AM Waldrand 24, D-69 Heidelberg-Boxberg, and Emil Benz, Blieskastellerstrasse 42, D-6651 Blickweiler, both of Germany

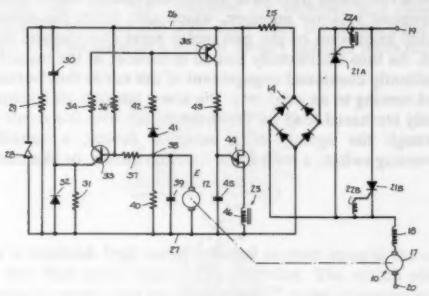
Continuation-in-part of Ser. No. 126,900, March 22, 1971, abandoned, which is a continuation of Ser. No. 795,292, Jan. 30, 1969. This application May 10, 1971, Ser. No. 141,965

Claims priority, application Switzerland, Feb. 1, 1968, 1570/68

Int. Cl. H02p *5/16*

U.S. Cl. 318—271 **12 Claims**

Circuit arrangements for applying an increasing voltage to a motor with increasing motor speed in a lower speed range and for applying a decreasing voltage to a motor with increasing motor speed in a higher speed range both to obtain proper regulation of the motor while avoiding overheating in startup



and overload conditions and to adapt said motor in the startup condition to loads having variable speed-torque requirements.

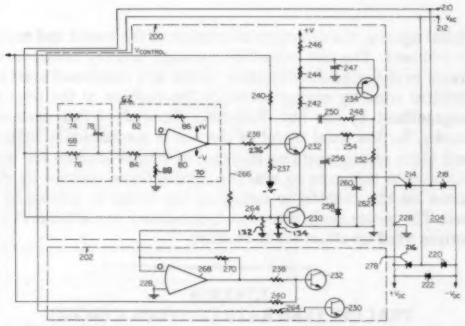
3,743,908
FIRING CONTROL CIRCUIT FOR GRID-CONTROLLED SWITCHING DEVICES

Adolf C. Betke, Greenfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Filed Sept. 7, 1972, Ser. No. 286,930

Int. Cl. H02p *5/16*

U.S. Cl. 318—345 **5 Claims**



A circuit having a grid-controlled rectifying means with a selectively variable firing angle, having a logic circuit for generating firing pulses including a first firing pulse at a predetermined firing angle, and having an inhibitor circuit for monitoring the state of conduction in the grid-controlled rectifying means. The inhibitor circuit enables the logic circuit whenever the rectifying means is not in conduction and disables the logic circuit at predetermined amount of time after each firing pulse generated by the logic circuit.

3,743,909
ANTI-SHOCK REVERSING-DRIVE SCREW ACTUATOR UNIT

Lyle J. Ritchie, St. Clair Shores, Mich., assignor to Automatic Refuse Systems, Inc., St. Clair Shores, Mich.

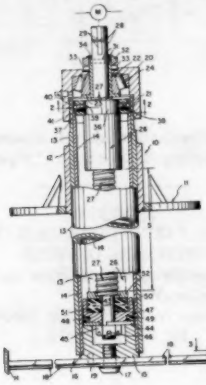
Filed Mar. 8, 1972, Ser. No. 232,786

Int. Cl. H02p *1/22*

U.S. Cl. 318—282 **16 Claims**

A rotatively restrained nut is fixedly connected through the agency of sleeve, plug and other components to a member which is to be reversibly driven axially, for example, a periodically reversed reciprocable ram or plunger, the nut and connected assembly being operated for the purpose by an elongated, axially fixed motor-driven screw. At an end of its stroke in one direction the nut bottoms against an impact washer

and, through the latter, against a resilient cushioning stop pad. The stop surrounds the corresponding end of the rotary screw and is restrained from axial movement relative to the screw by a cupped retainer member, which also limits the extent of radial expansion of the pad under axial compression by the nut. As thus additionally loaded in torsion, at the instant of a resiliently cushioned engagement of the nut in thus bottoming and coming to an axial stop, the screw imposes an instantaneously increased load on the drive motor with the result that, through the agency of a sensitive device, a centrifugal reversing switch, a built-in limit switch means, or like conven-



tional agency, the direction of rotation of the motor and screw is reversed. The nut assembly operated thereby commences travel in the opposite direction, aided in a cushioned start by resilient wind-up energy stored in the cushion at the time of engagement by the nut. Reaching the end of this reversed stroke, further axial travel of the nut is mechanically halted; and there results again an increase of torque load on the motor, due in this case to reactive tensile force exerted by the screw on the cushion to compress the latter in coming to a halt. The motor again is reversed, as assisted in a soft start by a torque wind-up effect at the cushion.

3,743,910

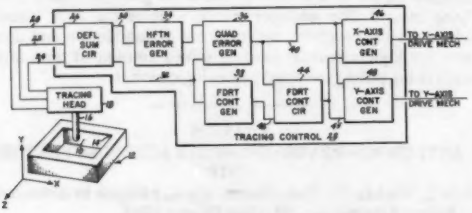
TRACING FEED RATE CONTROL CIRCUIT

Robert G. Wise, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 20, 1971, Ser. No. 173,417

Int. Cl. G05b *19/36*

U.S. Cl. 318—578 **5 Claims**



An improved electronic tracing control including a tracing feed rate control circuit for modifying the tracing velocity in response to internal corners in a model. When the tracing apparatus enters an internal corner, the control circuit immediately attenuates the tracing feed rate in response to an instantaneous change in the quadrature error signal. The tracing feed rate is then gradually increased as the tracing control changes direction through the corner.

3,743,911

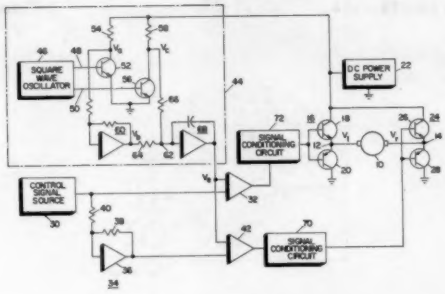
SERVOMOTOR PULSE WIDTH CONTROL CIRCUIT CAPABLE OF COMPENSATING FOR VARIATIONS IN SUPPLY VOLTAGE

Irvin L. Erler, Waynesboro, Va., assignor to General Electric Company, Lynn, Mass.

Filed June 18, 1971, Ser. No. 154,277

Int. Cl. G05b *11/28*

U.S. Cl. 318—599 **10 Claims**



A servomotor control circuit capable of compensating for variations in the output voltage of a poorly regulated or unregulated direct current power supply. A triangular waveform having an amplitude dependent upon the amplitude of the power supply output is compared in first and second comparator amplifiers to normal and inverted forms, respectively, of a motor control signal. The output signals of the comparator amplifiers determine the state of first and second switches connecting opposite terminals of the servomotor to the power supply. The width of a voltage pulse applied to the servomotor is inversely related to the magnitude of the power supply output voltage, making the average applied voltage substantially independent of the magnitude of the power supply output voltage.

3,743,912

SERVO-CONTROL SYSTEM

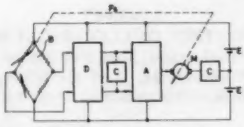
Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,680

Claims priority, application Japan, Oct. 28, 1969, 44/86250; Apr. 3, 1970, 45/28465; Apr. 20, 1970, 45/33615; June 19, 1970, 45/53661; June 19, 1970, 45/53662; Oct. 28, 1969, 44/102431; Jan. 27, 1970, 45/8452; Apr. 22, 1970, 45/39195; May 11, 1970, 45/45826; June 19, 1970, 45/61401; June 27, 1970, 45/64316

Int. Cl. G06b *11/28*

U.S. Cl. 318—599 **31 Claims**

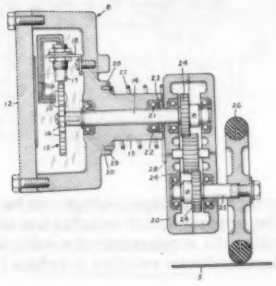


A servo-control system comprising a bridge circuit, a detector circuit, a motor, and a control circuit which functions as a pulsive switching circuit, said detector circuit being controlled by the output of said bridge circuit, said motor being controlled by the output of said bridge circuit through a said detector circuit under the control of said control circuit and controlling and bringing said bridge circuit to a balanced condition.

3,743,913
MECHANISM FOR ELECTRICALLY TRANSMITTING THE SPEED OF TRAVEL OF A CONVEYOR BELT

Eugene L. Rebucci, Union City, N.J., assignor to Merrick Scale Mfg. Company, Passaic, N.J.

Filed Feb. 24, 1972, Ser. No. 229,238
Int. Cl. G01p 3/02
U.S. Cl. 318—327 4 Claims

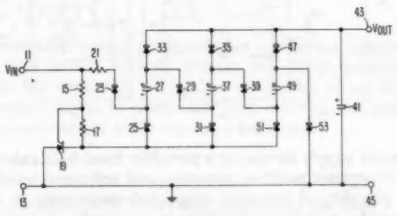


The speed of travel of a conveyor belt is electrically transmitted to a weighing system by a unitary mechanism mounted relative to the conveyor belt and including a friction wheel contacting the conveyor belt under pressure to be rotated at a speed proportional to the speed of travel of the conveyor belt and a pulser wheel rotated by the traction wheel in proximity to an induction coil generating digital speed signals.

3,743,914
HALF WAVE VOLTAGE DIVIDER

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 17, 1972, Ser. No. 218,088
Int. Cl. H03k 3/57; H02m 7/22
U.S. Cl. 320—1 7 Claims



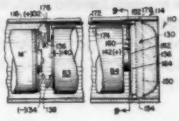
An electrical circuit is provided in which a bank of capacitors is controllably charged in series and then discharged in parallel through the interaction of a voltage divider, a silicon controlled rectifier, and diode circuit elements to transform a sinusoidal line voltage into a half-wave pulse. The magnitude of the pulse is a function of the RMS line voltage input and the number of capacitors in the bank. This function may be expressed as $1/(k)\cdot V/n$ where V is the RMS line voltage input, n is the number of capacitors in the banks and k is the transformation and round-off error constant.

3,743,915
BATTERY POWERED IMPLEMENT AND CIRCUIT CONTROL THEREFOR

Charles R. Struck, 125 Arboleda Road, Santa Barbara, Calif.

Filed Sept. 8, 1972, Ser. No. 287,565
Int. Cl. H01m 45/00; F21l 7/00
U.S. Cl. 320—2 7 Claims

A portable battery powered implement embodying a novel floating arrangement of dry cell batteries in the implement casing, together with a rotary switch plate which is movable between "off" and "on" positions for completing a circuit through the batteries and load. Each time the switch plate is moved to its on position a shift of battery position takes place

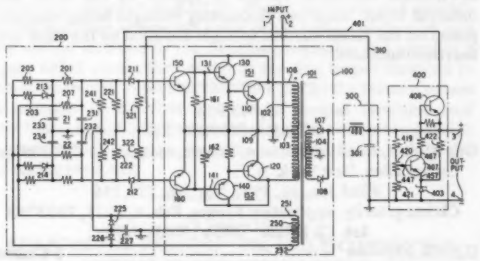


so as to establish fresh metal to metal contact areas in the circuit and thus avoid contact deterioration. The switch plate constitutes an end wall for the casing and novel means are provided for effecting its removal and replacement for battery substitution purposes.

3,743,916
REGULATED CONVERTER CIRCUIT WITH PULSE WIDTH MODULATION CIRCUIT USING PASSIVE COMPONENTS

Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 13, 1972, Ser. No. 271,396
Int. Cl. H02m 3/32
U.S. Cl. 321—2 7 Claims



A DC to DC converter utilizes oppositely phased feedback networks having passive components to sustain the converter oscillations and modulate the oppositely phased switching devices. Regulation is achieved by modifying the residual charges on the storage components in the feedback networks. Signal dissymmetry in the converter switching devices is counteracted by controlling the balance of the residual charge level of the storage devices in the oppositely phased feedback networks.

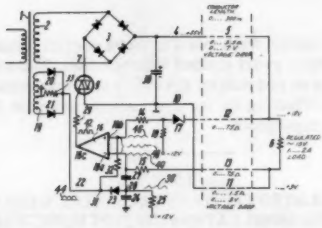
3,743,917
ARRANGEMENT FOR MAINTAINING A CONSTANT DIRECT CURRENT VOLTAGE

Herbert Zettl, Erfelden, and Emil Siegel, Darmstadt-Arheilgen, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Nov. 1, 1971, Ser. No. 194,739
Claims priority, application Germany, Oct. 31, 1970, P 20 53 512.0
Int. Cl. G05f 1/64, 1/56
U.S. Cl. 321—18 4 Claims

An arrangement for maintaining a constant voltage at a variable load includes an adjustable direct current voltage source having a positive and a negative pole. A voltage regulator is provided which has comparator inputs and a triac which is connected to the voltage source for adjusting the voltage source in response to changing values of voltages applied to the comparator inputs. Four similar conductors are provided

which are equal and adjustable in length and which together form a bridge circuit for maintaining the load voltage constant independently of the conductor lengths. To accomplish this, the first conductor is connected between the positive pole of the voltage source to one terminal of the load, the second conductor is connected between the negative pole of the voltage source and to other terminal of the load, the third conductor is connected between the one terminal of the load and the one comparator input of the voltage regulator, and the fourth conductor is connected between the other terminal of the load

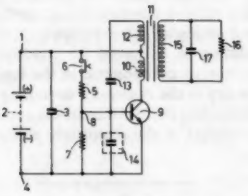


and the other comparator input of the voltage regulator. A voltage equalizer is interposed between the third conductor and the one comparator input to equalize the voltages applied to the differential inputs of an operational amplifier whose output controls the triac. A full wave rectified voltage derived from the main alternating current power source is supplied to one of the differential inputs of the operational amplifier and a sawtoothed reference voltage is applied to the other differential input, these two fluctuating voltages being superimposed on the direct current voltages supplied by the third and fourth conductors.

3,743,918
DC-AC CONVERTER

Guy Maitre, Rueil-Malmaison, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,216
Claims priority, application France, Feb. 4, 1971, 7103783
Int. Cl. H02m ; H05b ; H03k *3/30*
U.S. Cl. 321—44 **8 Claims**



A DC-AC transistor converter for supplying a low-pressure mercury vapor discharge lamp.

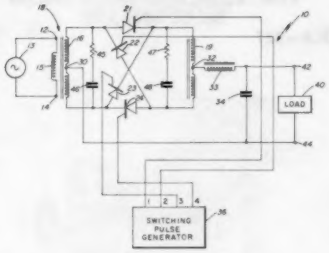
A capacitive potential divider is used for operation of the transistor while one of the capacitors of this potential divider is arranged between the emitter and the base of the transistor in the converter.

3,743,919
REGULATED CYCLOCONVERTER

Donald W. Bingley, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 14, 1972, Ser. No. 262,867
Int. Cl. H02m *5/30*
U.S. Cl. 321—69 R **12 Claims**

A method of utilizing a cycloconverter to achieve regulated AC power by proportional control of the high frequency waveform from a high frequency generator in such a manner that the average value of output voltage is varied to meet the required waveshape. By utilizing a reactor winding and controlling the current through it by means of a semiconductor

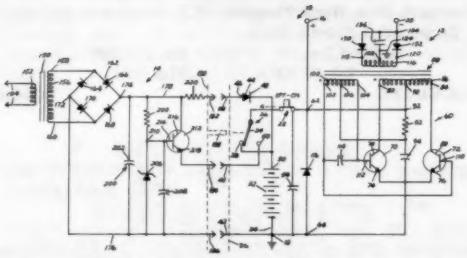


switching arrangement, output voltage can be varied even to zero while the semiconductor switches are still conducting, thereby avoiding the requirement of waiting for nonconduction of the semiconductor switches to reduce the output voltage to zero.

3,743,920
PORTABLE ELECTRONIC CALCULATOR POWER SUPPLY

Peter Ubilos, Franklin, Mass., assignor to Bowmar/Ali, Inc., Acton, Mass.

Filed July 17, 1972, Ser. No. 272,411
Int. Cl. H02m *5/40*
U.S. Cl. 321—2 **7 Claims**



A power supply for use in a portable, hand-held calculator which comprises positive, negative, and reference terminals, and a plurality of batteries connected electrically in series between the positive and reference terminals. A means for generating a negative voltage is coupled to the batteries and between the negative and reference terminals, the generating means including an oscillator circuit having an input circuit coupled to the positive terminal, an output circuit, a rectifier circuit, and means coupling the rectifier circuit to the output circuit.

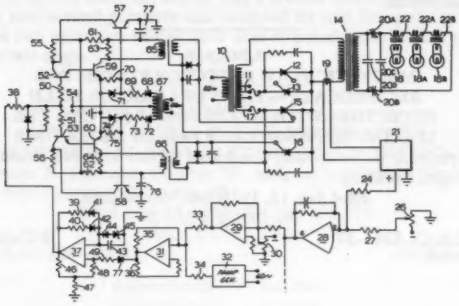
3,743,921
TAP CHANGING CURRENT REGULATOR

Brian C. Legg, 12 Coral Drive, Hamilton, Ontario, and Eric G. Cowie, 4517 Cottonwood Drive, Burlington, Ontario, both of Canada

Filed June 12, 1972, Ser. No. 262,122
Claims priority, application Canada, July 2, 1971, 117,181
Int. Cl. G05f *1/20*
U.S. Cl. 323—4 **2 Claims**

A constant current control system for lighting applications, in particular airport series lighting arrangements, using a multi-tap transformer connected to the load effectively through back-to-back thyristors which are selectively fired to

connect the various taps to the load in order to regulate the current. A signal representative of the square of the current is



used to produce the control signal which controls the firing point of the various thyristors. The control signal is a series of impulses produced by a multivibrator.

3,743,922

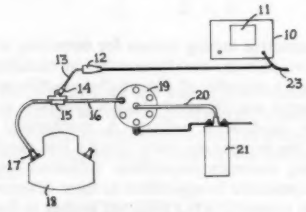
PORTABLE AUTOMOTIVE SPARK VOLTAGE TESTER

Nicholas G. Festos, 2750 North Clark St., Chicago, Ill.

Continuation-in-part of Ser. No. 801,328, Feb. 24, 1969, abandoned. This application June 7, 1971, Ser. No. 150,365

Int. Cl. G01r *29/00, 19/22*

U.S. Cl. 324—19 **1 Claim**



A circuit for testing spark voltages in internal combustion engines or similar devices wherein the circuit capacitively samples the voltage of an in situs spark plug of an internal combustion engine by shunt-rectifying, filtering, and applying it to a direct current meter for visual indication.

3,743,923

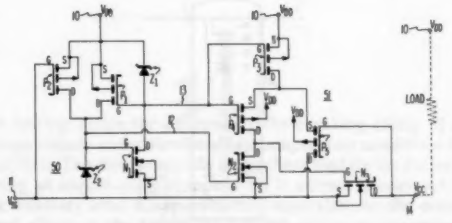
REFERENCE VOLTAGE GENERATOR AND REGULATOR

Goetz Wolfgang Steudel, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,224

Int. Cl. G05f *1/56*

U.S. Cl. 323—22 R **11 Claims**



A circuit which is utilized to produce a reference voltage that is substantially independent of changes in the supply line voltage and in temperature and which produces a regulated output voltage as a function of the reference voltage.

3,743,924

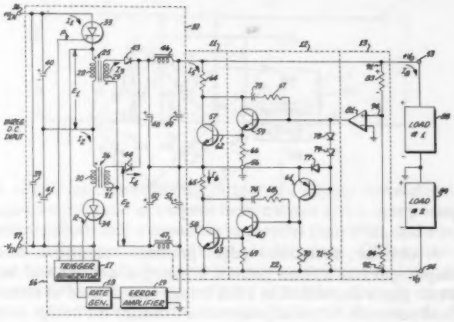
DUAL VOLTAGE REGULATOR

Luther L. Genuit, Scottsdale, and Robert B. White, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed July 3, 1972, Ser. No. 268,412

Int. Cl. H02j *1/14*; G05f *1/64*

U.S. Cl. 323—22 T **5 Claims**



A pair of amplifiers and an equalizer circuit connected to a pair of voltage output terminals in a switching regulator sense the voltage between each of the output terminals and ground. A first amplifier senses the value of the voltage delivered to a first output terminal by the switching regulator and supplies a signal which causes the voltage at the first output terminal to remain constant. A second amplifier senses the relative values of voltages at the first and second output terminals and develops a signal which causes the equalizer circuit to provide a constant ratio of voltages at the two output terminals of the switching regulator.

3,743,925

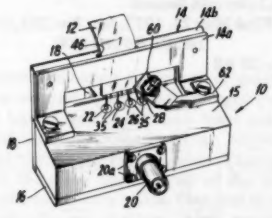
ADAPTER FOR TERMINATING MULTICONDUCTOR SIGNAL TRANSMISSION CABLE

Dennis Bossi, Hatboro, Pa., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 27, 1970, Ser. No. 93,319

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 R **4 Claims**



An adapter for terminating the conductors of a multiconductor signal transmission cable with matched impedances and including a conductive terminating block carrying removable impedance elements disposed in bores within the block and providing exterior terminals to which driven signal conductors of the cable may be connected. An external connector on the block is internally connected through another suitable input impedance element so that an input signal may be simultaneously impressed, via the impedance elements, on selected conductors of the cable to be driven. An output ter-

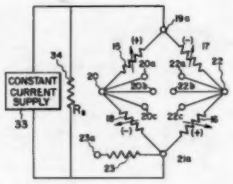
minal provided by a quiet line load impedance carried within the block is disposed to accept a conductor of the cable upon which output signals are to be measured.

3,743,926

FINE LINEARITY CONTROL IN INTEGRAL SILICON TRANSDUCERS

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,633
Int. Cl. G01l 9/04
U.S. Cl. 323—75 N **8 Claims**



A circular, restrained edge, pressure responsive silicon diaphragm has a fixed pattern of integral central and outer strain gages connected in a full bridge circuit used to measure fluid pressure. A fine adjustment to linearize the bridge output voltage is made by selecting the active diameter of the diaphragm to obtain a predetermined radial position of the outer gages. The resulting bridge resistance change with applied pressure compensates for the nonlinearity of output voltage due to inherent nonlinear mechanical behavior of the diaphragm.

ERRATA

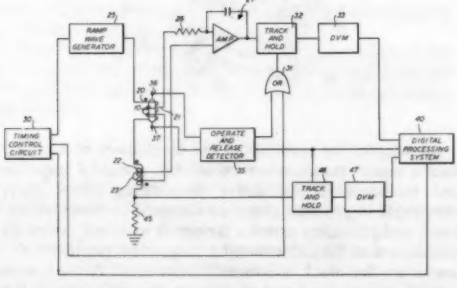
For Classes 324—19, 324—58, 324—34, 324—73, and 324—166 see:
Patents Nos. 3,743,922, 3,743,925, 3,743,934, 3,743,939, and 3,743,940

3,743,927

APPARATUS FOR MEASURING CONTACT AND RETRACTILE FORCES OF MAGNETICALLY OPERATED SWITCHES

Robert O. Bridges, Winston-Salem, N.C., and Paul W. Renaut, Columbus, Ohio, assignors to Western Electric Company, Incorporated, New York, N.Y., by said Bridges and Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J., by said Renaut

Filed May 22, 1972, Ser. No. 255,579
Int. Cl. G01r 31/00
U.S. Cl. 324—28 RS **6 Claims**



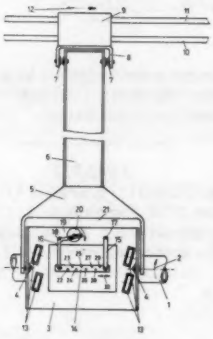
Apparatus automatically determines the ratio of the contact force at saturation and the retractile force of magnetic reeds by measuring the magnetic flux at saturation and release of a sealed contact switch. Additionally, the ampere-turns of the operate and release points of the switch are monitored to test the switch.

3,743,928

MAGNETIC FLAW DETECTOR SYSTEM FOR RECIPROCATING PAIRS OF LEAKAGE FIELD DETECTORS WITH MEANS FOR ADJUSTING THE SPACING BETWEEN EACH PAIR OF DETECTORS

Friedrich M. O. Forster, Grathwohl Strasse 4, D-741 Reutlingen, Germany

Filed Jan. 12, 1971, Ser. No. 105,856
Int. Cl. G01r 33/12
U.S. Cl. 324—37 **8 Claims**



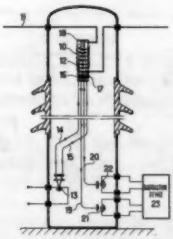
A non-destructive testing system for detecting longitudinal and transverse defects, simultaneously, in metallic tubes or pipes in which a plurality of essentially punctiform magnetic sensing elements are disposed along a generally straight line adjacent the workpiece surface. A mechanical oscillator reciprocates the sensing elements along a line parallel to that of the sensing elements disposition. Adjacent elements are electrically connected in opposition to form differential probe pairs, the line connecting the adjacent probes to form the differential pairs being inclined at 45 degrees to the line of reciprocation. In addition to providing for the simultaneous detection of longitudinal and transverse defects, the system disclosed can resolve the signals from ID and OD defects to a degree heretofore unobtainable.

3,743,929

CURRENT REDUCERS UTILIZING THE FARADAY EFFECT

Gilbert Lesueur, Aix-les-Bains, France, assignor to Alsthom-Savoisienne, Saint-Ouen, France

Filed Nov. 6, 1970, Ser. No. 87,417
Claims priority, application France, Nov. 6, 1969, 6938300
Int. Cl. G05f 3/00
U.S. Cl. 324—96 **10 Claims**



Improvement regarding current reducers utilizing the Faraday effect of magneto-optical rotation of polarized light,

characterized in that a first beam passes through a first polarizer prior to penetrating into a magneto-optical material and is analyzed by a second polarizer at the output of the magneto-optical material, and in that a second beam is polarized by said second polarizer and analyzed by said first polarizer, the two polarizers having their axes of polarization shifted by certain angle.

3,743,930

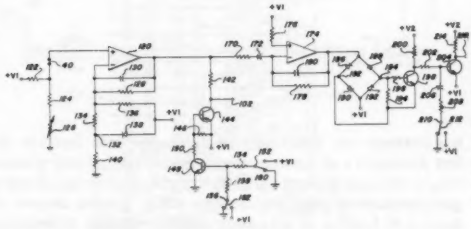
MOISTURE TESTER HAVING TEMPERATURE CONTROLLED VARIABLE TIME DELAY CIRCUIT

George H. Fathauer, Decatur, Ill., assignor to Burrows Equipment Company, Evanston, Ill.

Filed Aug. 13, 1971, Ser. No. 171,574

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **10 Claims**



A time delay circuit for use with a grain moisture tester is disclosed including a differentiating circuit operative to delay the taking of a reading until the time rate of change of the output of a temperature sensing element falls below a predetermined value.

3,743,931

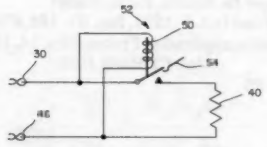
STORAGE BATTERY TESTING DEVICE

John W. Brodhacker, c/o ESB, P.O. Box 8109, Philadelphia, Pa.

Filed Aug. 10, 1971, Ser. No. 170,578

Int. Cl. G01n *27/42*; H01m *31/04*

U.S. Cl. 324—29.5 **8 Claims**



A testing device for determining the cranking ability of a storage battery under simulated low temperature conditions is described. The device imposes an auxiliary load on the battery during an engine cranking operation at normal temperature. The auxiliary load is approximately equivalent to the combined effect on the battery and engine of low temperature. Battery condition is determined by its ability to crank motor with the additional load.

3,743,932

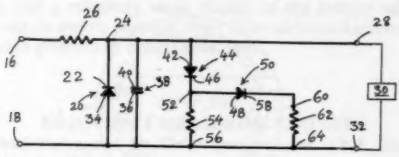
CLIPPED CORRELATION TO SIGNAL-TO-NOISE RATIO METER

Howard S. Newman, East Lyme, and Roger W. Greenough, Oakdale, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1972, Ser. No. 236,615

Int. Cl. G01r *7/00*; H04b *1/00*

U.S. Cl. 324—140 D **7 Claims**



A circuit for converting the output of a clipper correlator to signal-to-noise ratio in a signal from a sonar array, comprising a primary diode and a capacitor in parallel therewith, and a series of resistor-secondary diode combinations. Different resistor-secondary diode combinations approximate different regions of the output of the clipper correlator, thus giving an output representing signal-to-noise ratio of the signal. A modified form of the circuit uses field effect transistors (FETS) and differential amplifiers as circuit elements.

3,743,933

WAVE GUIDE

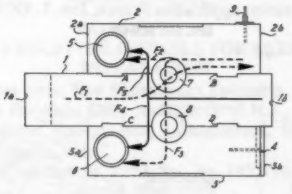
Jean Preti, Clamart, France, assignor to Societe de Fabrication d'Instruments de Mesure/S.F.I.M., Massy, France

Filed Sept. 9, 1971, Ser. No. 178,873

Claims priority, application France, Sept. 23, 1970, 7034480

Int. Cl. H04b *1/58*

U.S. Cl. 325—24 **3 Claims**



An arrangement including a main wave guide flanked by two auxiliary wave guides, all being arranged parallel to one another. Each lateral wall of the main wave guide is formed with a slot, the slots providing openings between the main wave guide and the auxiliary wave guide. The length of each slot is equal to the wave length in air of the wave which is propagated in the main wave guide. One end of one auxiliary wave guide absorbs an incident wave traveling in one direction, and one end of the other auxiliary wave guide reflects an incident wave traveling in the same direction. At its other end, each auxiliary wave guide may have a crystal for receiving energy flowing in the opposite direction toward that other end. The wave guide arrangement may form part of a detection means including a source of microwaves for providing signals traveling along the main wave guide in said one direction, an aerial for transmitting and also for providing signals traveling along the wave guide in the opposite direction, an amplifier chain connected to each of the crystals, and a phase comparator connected to the amplifier chains.

3,743,934

APPARATUS FOR MONITORING THE AIR GAP IN ROTARY ELECTRICAL MACHINES USING MAGNETIC FIELD PLATES OR MAGNETO DIODES

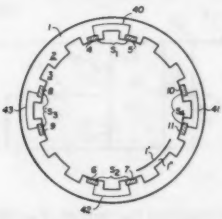
Rudolf Risch, Baden, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 6, 1971, Ser. No. 140,928

Claims priority, application Switzerland, May 20, 1970, 7512/70

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 E 10 Claims



The present apparatus monitors the width of an air gap between the rotor and stator of an electrical machine by bridge circuit means which comprise magnetic field responsive probes located in the stator, preferably adjacent to the air gap. Each probe comprises a magnetic field responsive impedance element, such as a Hall-generator, and a temperature responsive ohmic resistance element. The probes are connected in pairs to form said bridge means, whereby monitoring output signals are produced between diagonally opposite bridge terminals, which are evaluated by, for example, a peak voltage rectifier and an indicating instrument.

3,743,935

METHOD AND APPARATUS FOR RECEIVING INFORMATION TRANSMITTED THROUGH RAILROAD TRACK CIRCUITS

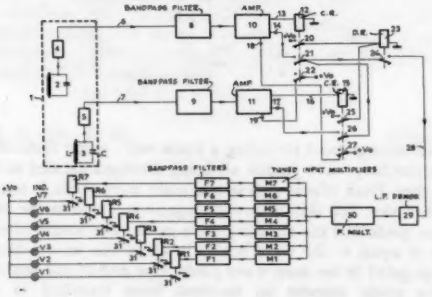
Gilbert L. Alt, Bois-Colombes, France, assignor to Compagnie de Signaux et d'Entreprises Electriques, Paris, France

Filed Jan. 5, 1971, Ser. No. 104,114

Claims priority, application France, Jan. 7, 1970, 7000325

Int. Cl. H04b *1/00*

U.S. Cl. 325—51 7 Claims



A method and apparatus for receiving coded information transmitted through track circuits in a railroad block system to a vehicle moving along the railroad track. Successive track circuits encountered by the vehicle provide alternatingly different excitation frequency signals. Each excitation frequency is modulated by a given number of modulation frequencies each representing information to be transmitted. The modulation frequencies are very low to provide a sufficiently high modulation index. A receiver on the vehicle includes a detector for extracting the modulation frequencies from the exciting frequency, frequency multipliers for multiplying the frequency of the detected modulation frequencies, band-pass filters for separating the different multiplied frequencies and indicating devices associated with the filters. The receiver distinguishes between excitation frequencies from adjacent track circuits. Similar fixed receivers may be provided in each track circuit.

3,743,936

DATA TRANSMISSION SYSTEM ON ONE LINE

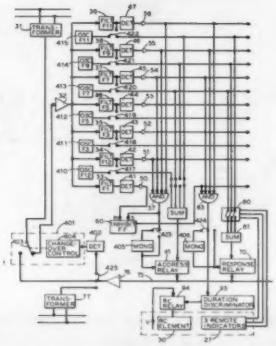
Guy Percher, Val de Marne, France, assignor to Schlumberger Instruments Et Systems, Paris, France

Continuation-in-part of Ser. No. 32,686, April 28, 1970, Pat. No. 3,699,523. This application Oct. 20, 1971, Ser. No. 190,870

Claims priority, application France, Oct. 28, 1970, 7038826

Int. Cl. H04b *7/00*

U.S. Cl. 325—55 7 Claims



A data transmission having a central unit and data points grouped in satellite stations. The selection of any data point is performed by: transmitting from the central unit a combination of four frequencies for selecting one of the stations, and then transmitting a combination of three frequencies for selecting one of the data points in that station. Transmission of signals is effected by way of a conductor pair or a radio link, with each station being switched into a transmitting mode when a preselected combination of signals are received thereby.

3,743,937

INSTALLATION FOR SUCCESSIVELY TRANSMITTING A CALL SIGNAL FROM A PLURALITY OF TRANSMITTERS IN TURN

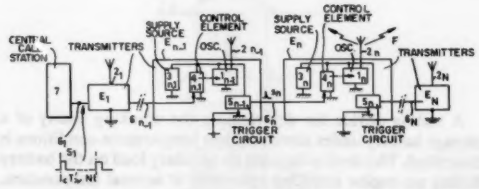
Pierre Saillard, Saint-Leu-D'Esserent, France, assignor to Charbonnager De France, Paris, France

Filed Oct. 5, 1971, Ser. No. 186,670

Claims priority, application France, Oct. 14, 1970, 7037175

Int. Cl. H04b *1/00*

U.S. Cl. 325—55 12 Claims



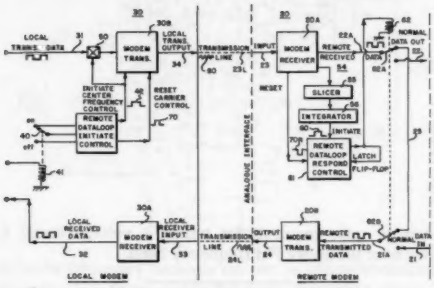
A central call station is connected to a plurality of transmitters successively triggered to transmit a high frequency call

signal for a predetermined time with each transmitter triggered by the preceding transmitter through connecting wires.

3,743,938
CLOSED DATA LOOP TEST APPARATUS FOR DATA TRANSMISSION MODEM

Steven Jay Davis, Ridgefield, Conn., assignor to General Datacomm Industires, Norwalk, Conn.

Filed Aug. 10, 1971, Ser. No. 170,428
Int. Cl. H04b *1/60*; H04j *3/12*; H04m *11/00*
U.S. Cl. 325—67 9 Claims

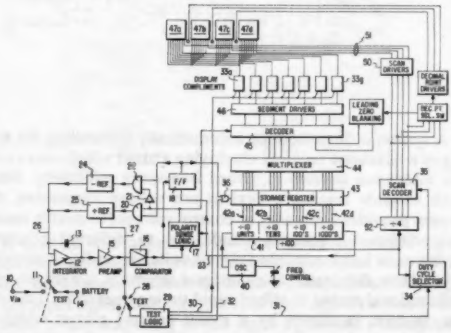


A method and apparatus are provided for operating a remotely located data transmission modem in a loopback test on the digital or data output side of the modem in order to permit remote testing of the modem unit and interconnecting transmission system. Control apparatus is utilized in a local modem to send a center-frequency command signal that is sensed at the remote modem to automatically connect the respective input and output data leads. A second command signal transmitted from the local modem is sensed at the remote modem to restore that modem to normal operation.

3,743,939
MULTIMETER BATTERY AND DISPLAY FUNCTION TEST APPARATUS

Irwin Munt, Elizabeth, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed May 1, 1972, Ser. No. 248,852
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R 4 Claims

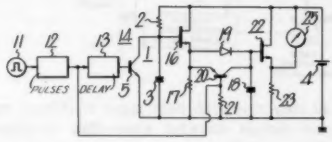


An apparatus for use with a multimeter of the digital display type wherein battery voltage and the various logic components of the meter can be tested. In a meter of the type having a dual slope integrating converter ther is provided a switch for connecting the battery terminal voltage to the input of the integrator and for utilizing the reference current switching interval to establish a test portion of the measurement cycle. The reference current interval establishes a signal for a test logic package which produces signals to transfer count information directly to the display element while the count is being accumulated; to activate display complement circuitry to illuminate all segments of the display means; and to alter the scan rate illuminating those display to brighten the display during test, keeping the duty cycle thereof at a minimum level for conserving battery voltage when not on test. Using the reference voltage portion of the test cycle, the display is caused to flicker, advantageously at a one-quarter cycle rate, and all segments are caused to be illuminated during some portion of the cycle, thereby providing a simple visual check of the various logic components of the system, all display elements, and a relatively static display of the battery voltage with a single switch position. Very little additional circuitry is needed to perform all of these functions.

3,743,940
FREQUENCY MEASURING CIRCUIT

Yasufumi Yamagata, c/o CoCo Research Inc. 17-8, Chuo-3, Nakano-ku, Tokyo, Japan

Filed Nov. 2, 1971, Ser. No. 194,982
Claims priority, application Japan, Nov. 4, 1970, 45/96992
Int. Cl. G01r *23/02*; G01p *3/48*, *3/54*
U.S. Cl. 324—166 5 Claims

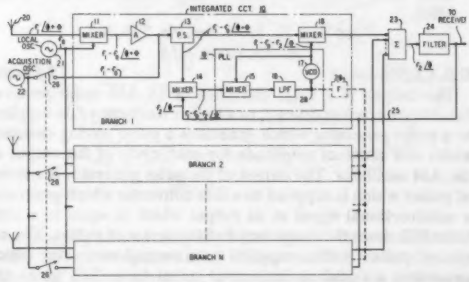


A frequency measuring circuit having a circuit for producing a sawtooth wave signal of a peak value corresponding to the pulse interval of an input pulse at every arrival thereof, an analog memory for storing the peak value of the sawtooth wave signal, a switching circuit for picking up the peak value of the sawtooth wave signal and supplying it to the analog memory to be memorized therein and an output circuit for deriving the content stored in the analog memory.

3,743,941
DIVERSITY RECEIVER SUITABLE FOR LARGE SCALE INTEGRATION

Michael James Gans, New Shrewsbury Township, and Douglas Otto John Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 28, 1971, Ser. No. 193,414
Int. Cl. H04b *7/08*
U.S. Cl. 325—305 16 Claims



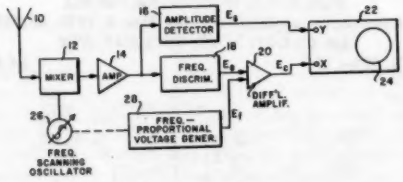
The cost of a diversity receiver is reduced by providing branch circuits which can be fabricated by large scale integration techniques. To this end nonintegrable filters are

eliminated and lead connections are minimized. Filtering is provided by a phase-locked loop which passes only the single frequency band to which it is locked. Channel acquisition is achieved by initially swamping all branches with an unmodulated acquisition signal at a frequency selected to cause all branches to lock on one channel. The acquisition signal, which may be introduced at numerous points, is removed after lock-on in order to permit detection of the intelligence modulation.

3,743,942
COMPRESSIVE SCANNING RECEIVER

Ralph A. Carpenter, Temple Hills, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1972, Ser. No. 263,486
Int. Cl. H04b 1/36
U.S. Cl. 325—337 **3 Claims**



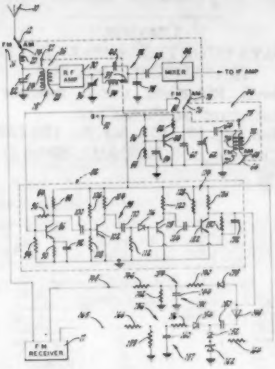
A frequency-scanning intercept receiver which compresses any given received (target) signal so that it looks like a spike at a single frequency instead of the usual sin X/X curve, the novel components comprising a frequency discriminator providing an error voltage, E_a, proportional to the difference between the i.f. frequency of the receiver and the instantaneous frequency of the mixer output and a differential amplifier which adds the error voltage and a voltage, E_f, proportional to the instantaneous frequency of the frequency-scanning oscillator to give a frequency-compensated output voltage, E_c, which is proportional to the frequency of the target signal and is used as a horizontal sweep voltage for the visual display means of the receiver.

3,743,943
APPARATUS FOR SUPPLYING A TUNING VOLTAGE TO AN ELECTRONICALLY TUNED FM RADIO RECEIVER FROM THE OSCILLATOR OF AN AM RADIO RECEIVER

Jerry M. Mason, and James L. McKibben, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1971, Ser. No. 210,865
Int. Cl. H04b 1/16
U.S. Cl. 325—453 **2 Claims**

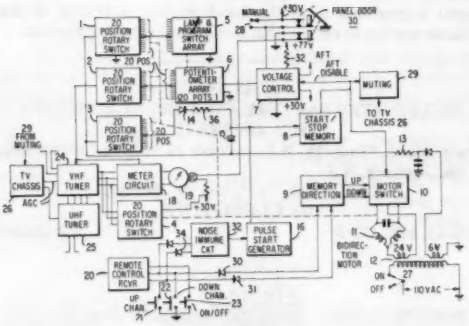
The output of a local oscillator of an AM radio receiver tunable from a frequency f_1 to a higher frequency f_2 is supplied to a pulse generator which generates a pulse having constant width and constant amplitude for each cycle of the output of the AM oscillator. The output of the pulse generator is a series of pulses which is supplied to a first converter which generates a unidirectional signal at its output which is equal to a constant K/2 times the frequency f of the series of pulses. The series of pulses is also supplied to a second converter which generates a signal at its output equal to − K/2 times the frequency f of the series of pulses plus a constant Z. The expression for the magnitude of the potential between the outputs of the first and second converters is Kf − Z, where K and Z are determined by the simultaneous solution of the equations $A = Kf_1 - Z$ and $B = Kf_2 - Z$, and A/B is the required tuning voltage ratio required for tuning a voltage tuned FM receiver over the entire FM frequency band.



3,743,944
AUTOMATIC TUNING CONTROL CIRCUITS

Thomas Austin Bridgewater, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,858
Int. Cl. H04b 1/32
U.S. Cl. 325—471 **8 Claims**



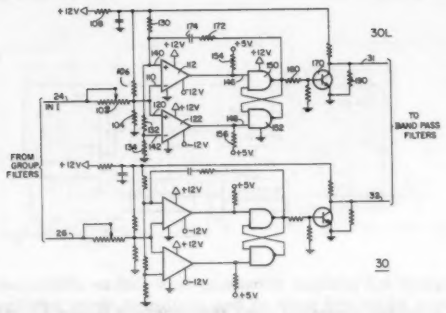
A system is described for automatically controlling the tuning of a television receiver employing a tuner which uses variable reactance devices to afford frequency selectivity. Since such variable reactance devices are voltage responsive, the system provides a plurality of control voltages to enable tuning over different frequency bands and to different channels within each band. A printed circuit switch including a plurality of contacts, fabricated as an integral assembly, are driven by a bidirectional motor to afford rapid tuning operation. The motor, in turn, is driven by a motor control circuit which is responsive to the motor position to determine when the motor accesses a preselected channel, to then stop the motor at that location. A series of indicator lamps coupled to the switches indicate the channel selected.

The system circuits also apply an automatic frequency control (AFC) voltage to the tuning system to assure quality reception. This AFC voltage is disabled during certain operating procedures to assure that the desired station will in fact be accessed.

3,743,945
LIMITER FOR MULTI FREQUENCY VOICE RECEIVER

Daniele Sellari, Jr., Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,951
Int. Cl. H03k 5/08
U.S. Cl. 328—28 5 Claims

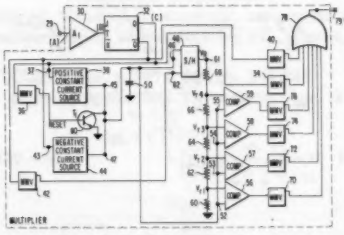


A multi-frequency receiver for use in telecommunications system receives tones within the audio frequency range. The tones transmitted to the receiver must be selectively separated, amplified, shaped, selectively separated once again into individual frequency bands and validated, through individual stages of the receiver. In each stage, a series of tests are applied to the tones before digital signals are transmitted responsive to the tone. The pulse shaping or limiting, associated with amplification and the tone signal check undertaken in that stage within the framework set out herein, is disclosed.

3,743,946
VARIABLE FREQUENCY MULTIPLIER AND PHASE SHIFTER

Edward W. Gass, and Fred W. Paramore, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed June 11, 1971, Ser. No. 152,188
Int. Cl. H03k 5/20
U.S. Cl. 328—110 23 Claims

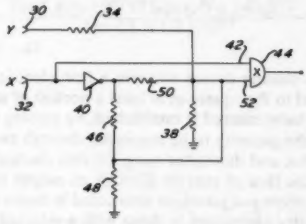


A method and apparatus for generating an output signal selectively displaced in phase from an input signal wherein the phase displacement remains the same irrespective of changes in the input signal frequency. A reference signal related in amplitude to the frequency of the input signal and a comparing signal which varies at a predetermined rate for a period of time related to the frequency of the input signal are compared, and a pulse is generated in response to the comparison. More specifically, a capacitor is charged and discharged from alternately enabled positive and negative constant current sources during successive interpulse periods of the input signal. The voltage on the capacitor is stored at the end of each charging period and the varying voltage across the capacitor is compared with one or more percentages of the stored voltage to generate output pulses. The output pulses may be combined with the input signal to provide frequency multiplication or the percentage may be made variable to provide variable phase shifting. A system for increasing the resolution of measurements obtained from a digital transducer and a system for generating selectively phase shifted control signals are also disclosed.

3,743,947
RELATIVE AMPLITUDE SEPARATION DETECTION GATE

Jon S. Fixler, Philadelphia, Pa., and Leonard Feldman, Great Neck, N.Y., assignors to Industrial Patent Development Corporation, Philadelphia, Pa.

Filed Jan. 10, 1972, Ser. No. 216,516
Int. Cl. G06g 7/14; H03k 5/20
U.S. Cl. 328—117 8 Claims

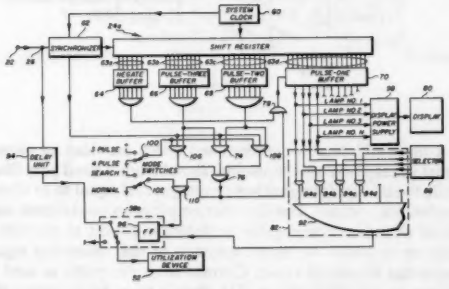


A relative amplitude separation detection gate in which a relative amplitude difference between signals may be detected. The gate or system inverts one of the signals. The inverted signal and the other signal are matrixed in predetermined relative amounts. A logic gate is then used to detect a predetermined polarity relationship between one of the input signals and the output of the matrix.

3,743,948
PULSE TRAIN SORTER

Robert K. Dahlin, Garden Grove, Calif.; Harold J. Arnold, Falls Church, Va.; Hugh M. Cleland, Laguna Hills, Calif.; Robert B. Lyon, Downey, Calif., and Robert W. Polkinghorn, Huntington Beach, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 4, 1969, Ser. No. 881,974
Int. Cl. H03k 5/00, 5/159
U.S. Cl. 328—119 15 Claims



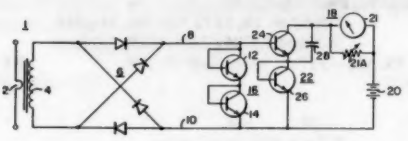
A plurality of incoming electrical signals is to be analyzed in order to sort out pulse-trains of interest. This is achieved by directing the signals along a transmission-device that has a number of readout-points, so that individual pulse-signals travel past these readout-points; resultant status-signals at the readout-points indicating the instantaneous presence or absence of pulse-signals at these points. When the status-signals indicate the presence of a pulse-train of interest, seg-

ments of the electrical-signal are routed to a suitable utilization device.

3,743,949
RMS SENSING APPARATUS

Joseph C. Engel, and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 23, 1971, Ser. No. 165,462
Int. Cl. G06g 7/20
U.S. Cl. 328—144 **28 Claims**

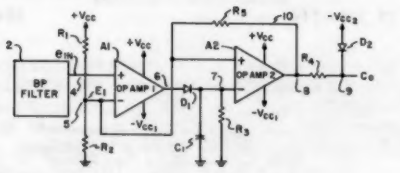


An RMS sensing device wherein a first electrical quantity proportional to the square of at least a portion of an electrical quantity to be measured is established, by passing the desired portion of the quantity to be measured through two p-n junctions in series, and thereafter using the first electrical quantity to control the flow of current through an output circuit comprising two more p-n junctions connected in series and including a capacitor connected in shunt with a selected one of the p-n junctions of the output circuit to eliminate the alternating current component from the selected p-n junction whereby the direct current flowing through the output circuit is a direct measurement of the RMS of the quantity which is being measured.

3,743,950
THRESHOLD DETECTOR FOR A VOICE FREQUENCY RECEIVER

Daniele Sellari, Jr., and Horace K. Frost, both of Corinth, Miss., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,556
Int. Cl. H03k 5/20
U.S. Cl. 328—151 **13 Claims**

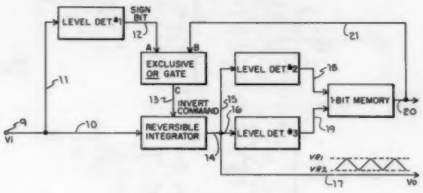


A threshold detector is disclosed which provides an output signal in response to a sinusoidal signal from a band pass filter while the sinusoidal signal has a voltage level equal to or above a reference voltage. The detector employs an operational amplifier as a first comparator or detector circuit to provide a pulse in response to each excursion of the sinusoidal signal above the threshold value. Current from the pulse is used to charge a capacitor in an RC circuit to a level above the reference voltage. A second operational amplifier is connected to the RC circuit to provide the desired constant output voltage so long as the stored voltage is equal to or above the reference voltage. Feedback from the output of the second operational amplifier to the input of the first operational amplifier is used to adjust the reference voltage to a level which makes the threshold detector insensitive to noise input associated with the sinusoidal signal.

3,743,951
VOLTAGE CONTROLLED UP-DOWN CLOCK RATE GENERATOR

John J. Carroll, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,510
Int. Cl. H03k 4/10
U.S. Cl. 328—181 **9 Claims**

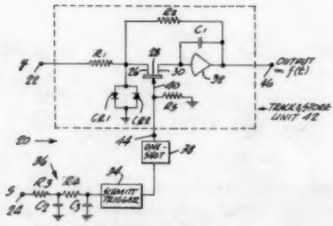


A voltage controlled clock rate generator having a reversible integrator in combination with an analog to digital conversion means in the output controlled by a direct current (D. C.) analog voltage input and a feedback of the digital output to produce a clock frequency directly proportional to the magnitude of the absolute value of the positive or negative D. C. voltage input with both square wave and triangular wave outputs and containing information as to whether the output frequency is a function of a positive or a negative frequency.

3,743,952
PHASE SENSITIVE DEMODULATOR

William Comley, Jr., Los Angeles, and Michael P. Hammontre, Lakewood, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 9, 1971, Ser. No. 170,132
Int. Cl. H03d 3/02
U.S. Cl. 329—110 **22 Claims**



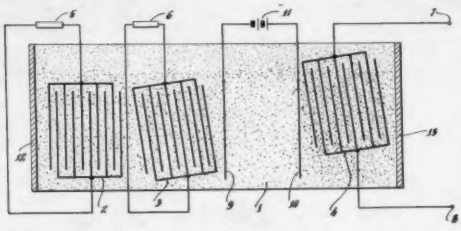
Phase sensitive demodulator including a track and store unit having input, output and switching terminals, and means for producing a phase-shifted switching signal from a carrier to operate the unit. A modulated carrier signal is applied to the input terminal of the unit, and the switching signal is applied to its switching terminal to produce at the output terminal, an output signal which closely approximates the envelope of the modulated carrier signal and, therefore, the original modulating signal. A double-ended embodiment of the demodulator includes a pair of complementary track and store units, and means for producing a corresponding pair of phase-shifted switching signals from a carrier to operate the units in a push-pull mode. Both single-ended and double-ended embodiments of the demodulator are implemented entirely of linear analog and logic devices.

3,743,953

SURFACE WAVE ACOUSTIC PARAMETRIC AMPLIFIER

Achintya K. Ganguly, Whitestone, N.Y.; Stanley Zemon, Boston, and Joseph Zucker, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed June 10, 1971, Ser. No. 151,652
Int. Cl. H03f 7/00
U.S. Cl. 330—4.6 3 Claims



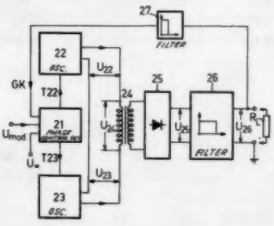
An acoustic surface wave parametric amplifier has an input interdigital pump transducer and an input interdigital signal transducer formed on the surface of a piezoelectric material. A source of ac power is coupled to each transducer with the frequency of the source coupled to the signal transducer being lower than the frequency of the source coupled to the pump transducer. The ac source supplied to each of the input transducers creates an electric field in the piezoelectric material which is converted into an acoustic surface wave which propagates on the surface of the piezoelectric material. Preferably, the input transducers are oriented at an angle to one another so that the signal acoustic wave and the pump acoustic wave propagate at an angle to one another causing phase matching between the signal and pump waves. Interaction between the pump and signal waves causes amplification of the signal wave which is detected by an output interdigital transducer oriented parallel to and opposite the signal transducer. A dc voltage source may also be supplied between the signal transducer and the output transducer to compensate for the losses caused by the free carriers of the piezoelectric material.

3,743,954

HIGH POWER MODULATOR-DIMODULATOR AMPLIFIER CIRCUIT

Ole Snedkerud, Windisch, Switzerland, assignor to Patelhold Patentverwertungs & Elektro-Holding AG., Glarus, Switzerland

Filed Apr. 5, 1972, Ser. No. 241,245
Claims priority, application Switzerland, Apr. 14, 1971, 5383/71
Int. Cl. H03f 3/38
U.S. Cl. 330—10 16 Claims



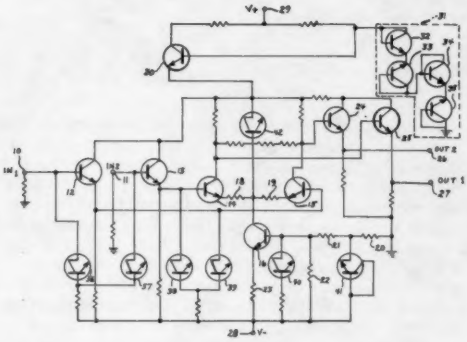
For use in high power applications, an apparatus for amplifying input signals having a predetermined upper frequency limit and employing a pair of phase modulated auxiliary carrier frequency sources having the same average frequency value being greater than the upper frequency limit of the input signals. The auxiliary carrier frequency sources are controlled by phase control means to have opposing phase displacements which are related to the momentary values of the amplified input signals. The outputs of said auxiliary carrier frequency sources are summed preferably by transformer means, the summation renders a signal of said average frequency and of modulated amplitude. This sum signal is demodulated, e.g., by fullwave rectification, and filtered to produce an amplified input signal being the amplifier output. Thus said carrier frequencies are performing an auxiliary function in amplifying the input signals and substantially do not appear in the amplifier output.

3,743,955

RADIATION HARDENING READ PREAMPLIFIER

Robert A. Stehlin, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 13, 1971, Ser. No. 162,071
Int. Cl. H03f 3/68
U.S. Cl. 330—22 1 Claim



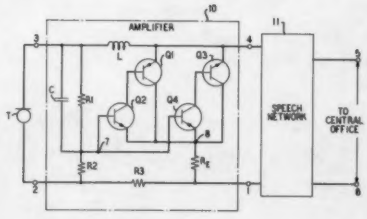
A read pre-amplifier capable of operation in a radiation environment utilizing self compensation throughout to provide radiation hardness against the effects of photocurrents which are induced by gamma radiation.

3,743,956

BRIDGE BIASING CIRCUIT FOR LINE POWERED AMPLIFIER

Peter Otto Schuh, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 20, 1972, Ser. No. 219,466
Int. Cl. H03f 3/04
U.S. Cl. 330—40 7 Claims



A circuit for biasing a single stage line powered transmitter amplifier includes three resistance elements, which, when connected to the line, form an electrical bridge. By appropriately selecting resistance values, the bridge may be balanced, thereby providing a biasing voltage that is relatively independent of transmitter resistance and thereby enabling

operation over longer line length. Additional economy is achieved by the use of two oppositely poled pairs of transistors connected in complementary Darlington configuration, in lieu of a conventional polarity guard. Depending on line polarity, one transistor pair is active, while the other is disabled by its bias.

3,743,957

NONINDUCTIVE EQUALIZING NETWORK

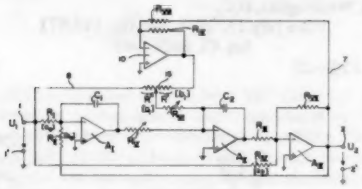
Karl Heinz Feistel, Eningen, 7412 Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Filed Dec. 3, 1971, Ser. No. 204,583

Claims priority, application Germany, Dec. 4, 1970, P 20 59 728.8

Int. Cl. H03f 1/36

U.S. Cl. 330—85 10 Claims



An equalizing network for correcting phase and amplitude distortions comprises three cascaded operational-amplifier stages, all with grounded noninverting inputs, the first two of them having capacitive feedback to operate as inverting integrators while the third one has a resistive feed-back to function as a summing inverter. The first stage receives on its inverting input, by way of identical resistors, the input voltage and the output voltage of the network and feeds the inverting input of the second stage through an adjustable resistor serving for selection of the frequency of maximum or minimum attenuation. The last-mentioned input also receives the input voltage and the inverted output voltage through respective branches of a potentiometer, serving for adjustment of the attenuation, whose slider is in series with a further adjustable resistor controlling the phase delay. The connection between the potentiometer extremities and the network terminals may include a reversing switch to change the sign of the attenuation.

3,743,958

CIRCUIT FOR COMPENSATING FOR LINEARITY-DEFECTS IN AMPLIFIERS

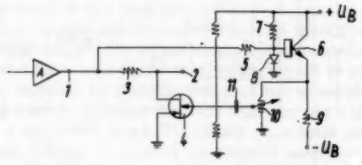
Hans Horneff, Darmstadt, Germany, assignor to Fernseh GmbH Darmstadt, Darmstadt, Germany

Filed Dec. 7, 1971, Ser. No. 205,671

Claims priority, application Germany, Dec. 9, 1970, P 20 60 458.4

Int. Cl. H03f 1/26

U.S. Cl. 330—149 4 Claims



A voltage divider is placed in series with an amplifier needing compensation. A resistor and a field-effect transistor form the voltage divider. A controlled amount of distorted signal is applied to the field-effect transistor to compensate for distortion in the amplifier.

3,743,959

VARIABLE EQUALIZER

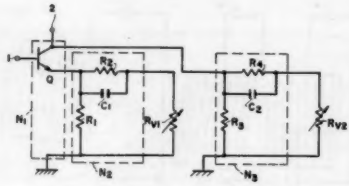
Hirokazu Kobayashi, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Dec. 21, 1970, Ser. No. 99,856

Claims priority, application Japan, Dec. 23, 1969, 44/104105

Int. Cl. H03x 3/04

U.S. Cl. 330—31 4 Claims



A variable equalizer requiring no inductive elements comprises a pair of four-terminal networks having selected external impedance characteristics. Variable impedance elements are connected to the output terminals of the four-terminal networks, and a third network, having an impedance transfer function proportional to the input impedance ratio of the two four-terminal networks, is connected to the input terminals of the latter networks.

3,743,960

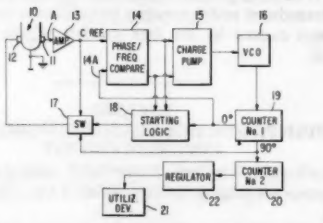
CIRCUIT FOR DRIVING FREQUENCY STANDARD SUCH AS TUNING FORK

Guetz Wolfgang Steudel, Flemington, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 1, 1972, Ser. No. 230,769

Int. Cl. H03b 3/04, 5/30

U.S. Cl. 331—1 A 13 Claims



A frequency standard such as a tuning fork initially is driven into oscillation by a high gain amplifier. The tuning fork then drives the amplifier and the latter drives a phase locked loop. When the signal produced by the phase locked loop is at the resonant frequency of the tuning fork and is in a predetermined phase relationship thereto, the loop itself rather than the amplifier is connected to drive the tuning fork, to provide stable tuning fork operation.

3,743,961

INCLINED AIR CORE SOLENOID FIELDS FOR LASERS

Robert Joseph Wayne, East Hartford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

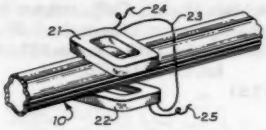
Filed Feb. 9, 1972, Ser. No. 224,788

Int. Cl. H01s 3/10

U.S. Cl. 331—94.5 4 Claims

A laser plasma discharge bore or tube having one or more pairs of air core solenoids in parallel or angularly disposed flux aligned positions across the discharge bore to provide linear discharge magnetic fields proportional to current for stabil-

ized laser action that is uniform and non-saturable and ad-



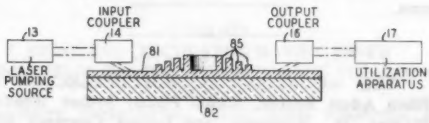
justable in amplitude and applicable to cross-field lasers and cross-field scan lasers alike.

3,743,962

THIN FILM RING LASERS

Robert Rosenberg, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed June 1, 1971, Ser. No. 148,312
Int. Cl. H01s 3/05; G02b 5/14
U.S. Cl. 331—94.5 **2 Claims**



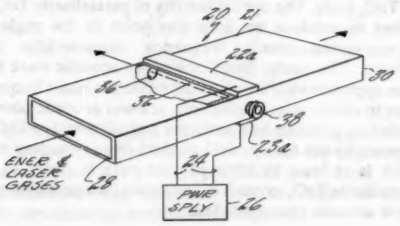
There are disclosed lasers in which light-guiding thin films contain ring-like patterns for producing the positive feedback needed to sustain oscillation. The species include both optically pumped and electrically pumped lasers, as well as species employing the principle of Maxwell's fisheye. Other species employ spiral or helical structures or closely coupled rings.

3,743,963

TRANSVERSE GAS LASER

Robert H. Bullis, Avon, and Albert W. Penney, Jr., Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 10, 1969, Ser. No. 857,647
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 **11 Claims**



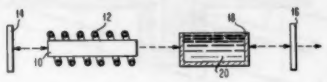
A laser employing pre-mixed flowing gases has an electric field and optical gain region which are transverse to flow. In one embodiment, the DC electric field is perpendicular both to flow and to the optical gain path; in another embodiment, the DC electric field is parallel to the optical gain path. Specific embodiments of pre-ionized means to stabilize the DC plasma in large sized or high flow velocity systems include an RF rake, RF pads, wires protected from flow by insulating tubes, and high conductivity seeding.

3,743,964

Q-SWITCHING SATURABLE ABSORBER DYE FOR A LASER

Karl H. Drexhage, Rochester, N.Y., and Ulrich T. Mueller-Westerhoff, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 75,601, Sept. 25, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,514
Int. Cl. H01s 3/11; G02b 5/24
U.S. Cl. 331—94.5 **26 Claims**



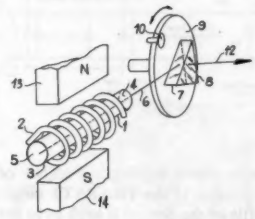
A Q-switched laser using as the Q-switch a saturable absorber dye from the class of bivalent transition metal ditheine complexes having a square planar structure.

3,743,965

TUNABLE LASERS

Franklin F. Offner, Deerfield, Ill., assignor to Spectro-Physics Inc., Mountain View, Calif.

Continuation of Ser. No. 564,428, July 11, 1966, abandoned, which is a continuation of Ser. No. 247,045, Dec. 26, 1962. This application July 12, 1971, Ser. No. 161,866
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **22 Claims**



Apparatus for obtaining laser action at a selected wavelength comprises a body such as a crystal composed of a substance that may be optically pumped in accordance with known laser principles. A glow discharge tube serves as a source of input radiation energy for the optical pumping and excites energy levels from which radiation is emitted at a plurality of wavelengths. An optical path for the crystal is provided and includes a pair of reflective surfaces between which the crystal and a prism are located, one of the reflective surfaces being constituted by a reflective coating on a face thereof at the side of the prism remote from the crystal. The prism is made from a material whose index of refraction varies with a variation in the wavelength of the radiation produced by the crystal and is mounted for adjusting its orientation such that only the radiation at the selected wavelength is repetitively reflected back and forth between the reflective surfaces, and radiations at all other wavelengths are lost from the path by dispersion in the prism.

3,743,966

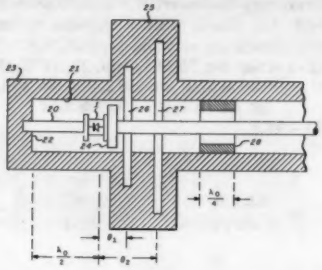
TRAPATT DIODE TRANSMISSION LINE OSCILLATOR USING TIME DELAYED TRIGGERING

Martin I. Grace, Framingham, and Harold J. Pratt, Jr., Andover, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,787
Int. Cl. H03b 7/14
U.S. Cl. 331—101 **8 Claims**

An active high-efficiency-mode semiconductor diode is coupled for the generation of oscillating high frequency elec-

tromagnetic fields in a transmission line network, the apparatus taking the form of a single port, high frequency oscil-



lator device. Oscillations are sustained by using the time delayed triggering phenomenon in the TRAPPAT semiconductor diode.

3,743,967

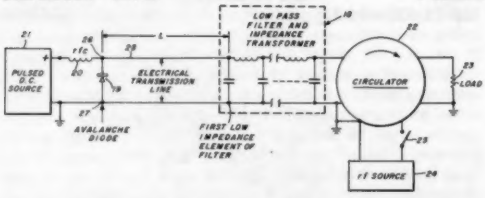
STABILIZED TRAPATT OSCILLATOR DIODE

George Washington Fitzsimmons, Lynnwood, and Wen Shuh Chen, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 16, 1972, Ser. No. 235,147

Int. Cl. H03b 7/06; H03f 3/10

U.S. Cl. 331—107 R **7 Claims**



An avalanche diode having a P+NN+ or N+PP+ doping profile and operable in the TRAPATT mode, but wherein the impurity profile of the device is such as to prevent initiation of TRAPATT oscillations by IMPATT oscillations. In contrast to prior art TRAPATT devices, the diode is inherently stable since the IMPATT mechanism results in only a small internal negative resistance which is effectively canceled by the positive diode bulk resistance, spreading resistance of the device and external circuit resistance.

3,743,968

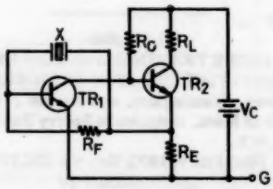
COLLECTOR-BASE COUPLED DOUBLE TRANSISTOR CRYSTAL OSCILLATOR

Yasutomo Miyake, Kohoku-ku, Yokohama; Toshio Shinada, Chofu-shi, Tokyo, and Takao Mogi, Utsunomiya-shi, Tochigi-ken, all of Japan, assignors to Kabushiki-Kaisha Kinsekisha Kenkyuyo, Tokyo, Japan

Continuation-in-part of Ser. No. 843,373, July 22, 1969, abandoned. This application July 15, 1971, Ser. No. 162,935

Int. Cl. H03b 5/36

U.S. Cl. 331—116 R **1 Claim**



The piezoelectric crystal oscillators are of a small size and may oscillate with fundamental frequencies and overtones of at least eleventh orders without using inductances.

3,743,969

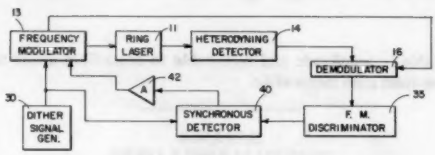
MODULATION SERVO CONTROL FOR FREQUENCY MODULATED RING LASER GYRO

Thomas J. Hutchings, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 12, 1969, Ser. No. 882,408

Int. Cl. H01s 3/00, 3/11

U.S. Cl. 332—7.51 **5 Claims**



A ring laser gyro has a pair of counter-rotating beams, the difference frequency between the beams being indicative of the rotational rate to which the instrument is subjected. The beams are frequency modulated to minimize frequency-locking therebetween. A servo control is provided to maintain the modulation index of the frequency modulation to an optimum value for minimal frequency-locking between the beams.

3,743,970

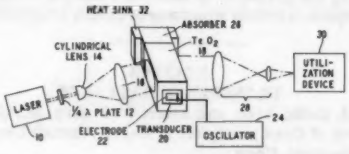
TEO ACOUSTOOPTIC LIGHT DEFLECTOR

William Adam Bonner, Scotch Plains; Arthur Woodward Warner, Jr., Whippany, and Donald Lawrence White, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1971, Ser. No. 204,814

Int. Cl. H01s 3/10

U.S. Cl. 332—7.51 **14 Claims**



In an acoustooptic light deflector, frequency modulated acoustic shear waves propagate in the [110] direction in a paratellurite TeO_2 body and the light beam, which is elliptically polarized, propagates at a small angle to the optic axis of the TeO_2 body. The optical activity of paratellurite TeO_2 is exploited to produce an inflection point in the angle of incidence-versus-acoustic frequency characteristic of the deflector. The center frequency of the acoustic wave is made to be approximately equal to the inflection point frequency in order to obtain larger deflections at lower acoustic power than heretofore possible. In a preferred embodiment the TeO_2 body is grown by the Czochralski method from a starting material which is at least 99.9999 percent pure in order to obtain paratellurite TeO_2 crystals of low optical scattering loss as well as low acoustic absorption loss.

3,743,971

VOR AM MODULATOR

William R. Hemme, Fairmont, Minn., assignor to Collins Radio Company, Cedar Rapids, Iowa

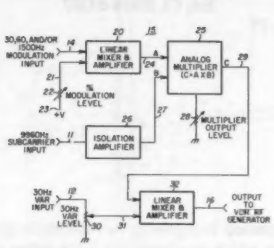
Filed Sept. 3, 1971, Ser. No. 177,717

Int. Cl. H03c 1/06

U.S. Cl. 332—38 **4 Claims**

Amplitude modulation techniques are applied to a 9960 Hz subcarrier signal of the type defined by VOR navigation systems by means separately applying a 30 Hz variable phase

test signal and a 9960 Hz subcarrier reference phase signal to an amplitude modulation means with the modulation means acting on the 9960 Hz frequency modulated subcarrier alone and selectively introducing controlled amplitude modulation levels of predetermined amplitude modulation components as exist in VOR transmission, with subsequent recombination



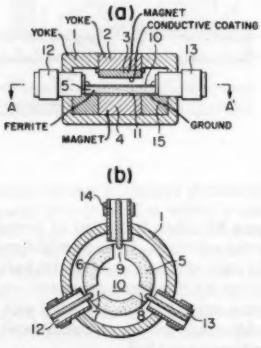
with the 30 Hz variable phase signal to provide a selectively controlled composite modulation signal comprising a 30 Hz variable phase signal and a 9960 Hz frequency modulated reference subcarrier, the latter signal being amplitude modulated at selected modulation levels with predetermined amplitude modulation frequency components.

3,743,972

STRIPLINE CIRCULATOR HAVING INNER CONDUCTIVE COATING FOR REDUCING VOLUME OF CAVITY

Taro Miura, Suginami-ku, Tokyo; Kiichi Nakamura, and Tadashi Hashimoto, both of Schikawa-shi, Chiba, all of Japan, assignors to T.D.K. Electronics Company Ltd., Tokyo, Japan

Filed June 16, 1971, Ser. No. 153,527
Claims priority, application Japan, June 30, 1970, 45/57577
Int. Cl. H01p 1/32
U.S. Cl. 333—1.1 **3 Claims**



The surface of a magnet which is disposed in opposed relation with respect to a line conductor vacuum-deposited upon a magnetic medium in a stripline circulator is rendered electrically conductive. The frequency characteristics of such a stripline circulator are considerably improved.

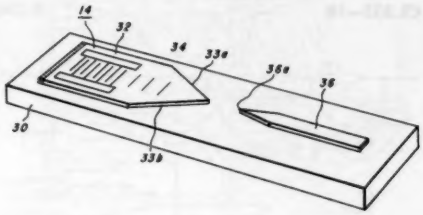
3,743,973

ACOUSTIC SURFACE-WAVE VELOCITY TRANSFORMATION

William Stanley Jones, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 26, 1971, Ser. No. 166,045
Int. Cl. H03h 9/30
U.S. Cl. 333—30 R **8 Claims**

A structure for generating an acoustic surface wave in a non-piezoelectric substrate includes a thin layer of piezoelectric material over a portion of the substrate. An interdigital transducer is formed on the piezoelectric material, and the end of the layer opposite one or both radiating directions of



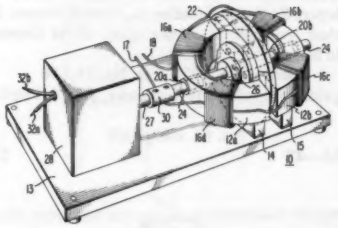
the transducer is tapered to reduce reflection of the surface wave as it propagates through the boundary between the piezoelectric layer and the substrate. A waveguide structure having a tapered end is also described.

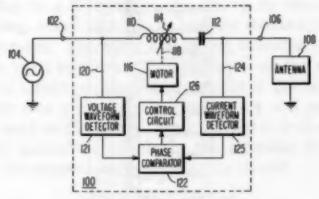
3,743,974

ANTENNA MATCHING NETWORK UTILIZING AN ADJUSTABLE HIGH-POWER INDUCTOR

Berthold Sheffield, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,770
Int. Cl. H03h 7/40
U.S. Cl. 333—17 **12 Claims**



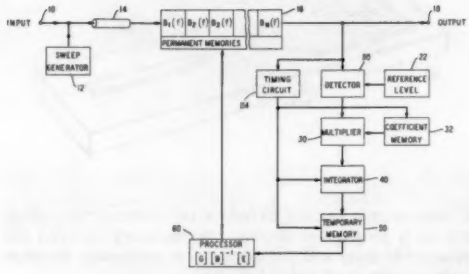


An adjustable high-power inductor comprising a toroidal inductance coil having a stationary two-section ferromagnetic core whose confronting ends form a pair of predetermined air-gaps therein. The equivalent reluctance of the magnetic flux path, and thus the inductance, is varied by rotating a disc through the air-gaps and about an axis parallel to the magnetic flux lines generated within the air-gaps. The disc carries a pair of diametrically opposed ferromagnetic members, each having a tapered profile. A reversible motor controls the angular position of the disc, and the angular displacement of the disc determines the equivalent reluctance of the magnetic flux path.

3,743,975
ADJUSTABLE EQUALIZER CONTROL APPARATUS

Chih-yu Kao, Lawrence, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 228,079
Int. Cl. H04b 3/04
U.S. Cl. 333—18 8 Claims

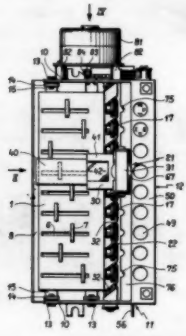


Apparatus for controlling an equalizer having a plurality of independently adjustable, serially connected equalizer sections. The apparatus controls the equalizer to minimize the square of transmission system misalignment integrated over all frequencies in the operating band of the system. The effect of each section of the equalizer at all frequencies in the operating band is considered in determining required adjustments for all sections.

3,743,976
CHANNEL SELECTING UNIT FOR HF TELECOMMUNICATION EQUIPMENT

Herbert Meyer, Rottweil-Buehlingen; Rudolf Mayer, Rottweil, and Lothar Volkheimer, Trossingen, all of Germany, assignors to Messrs. R. & E. Hopt KG

Filed July 1, 1970, Ser. No. 51,556
Claims priority, application Germany, July 4, 1969, P 19 33 976.5
Int. Cl. H03j 5/00
U.S. Cl. 334—47 15 Claims

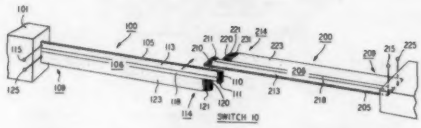


This is a channel selecting unit for radio and television receivers which comprises preset tuning units disposed in a row one behind the other, and a slide movable in a direction parallel to the row of tuning units. The tuning units and the slide are provided with contacts and contact bridges, respectively. By selectively positioning the slide adjacent to any of said tuning units the contacts of the selected tuning units are connected by means of the said contact bridges to bus bars extending parallel to the row of tuning units and are connected to associated circuits. Further, the slide may be provided with adjusting means which may be operatively connected to the adjacent tuning unit to adjust the setting of same.

3,743,977
LATCHING SWITCH

Robert Scott Randall, Haziet, and Ralph Arnold Tengelsen, Parlin, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1972, Ser. No. 248,044
Int. Cl. H01h 61/02
U.S. Cl. 337—77 11 Claims

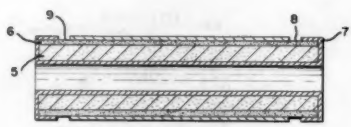


A latching switch comprising two normally electrically isolated elements which mechanically latch when deflected in a prearranged sequence in substantially orthogonal directions. A contact edge on each element engages a contact pad on the other when the elements are latched, providing two conductor paths per pair of elements. Each element may comprise a bimetal, deflection thereof being effected via application of an actuating signal to one face of the bimetal, which face functions as a heating resistor.

3,743,978
COATED FERRITE RF FILTERS

William Baird Fritz, 39 Brownstone Drive, Hershey, Pa.

Continuation-in-part of Ser. No. 883,501, Dec. 9, 1969, abandoned. This application Nov. 9, 1970, Ser. No. 88,042
Int. Cl. H03h 7/04
U.S. Cl. 333—79 13 Claims



In a low pass RF filter, a coating of barium titanate is applied to a ferrite substrate. In one embodiment, the RF filter is an extruded tube of ferrite coated with barium titanate. The tube is used as an RF filter for a connector pin. In another embodiment, a thin strip of ferrite is coated with barium titanate. This forms a filter strip for use on circuit boards or for use as a high capacity lossy power bus.

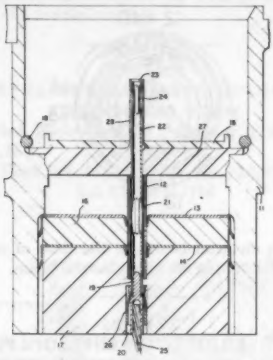
3,743,979
FILTERED CONNECTOR WITH BARREL SPRING CONTACT

Ferdinand William Schor, Altadena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 15, 1971, Ser. No. 162,864
Int. Cl. H01h 7/14
U.S. Cl. 333—79 9 Claims

In a filtered connector a conductive metal tube has a barrel spring contact for receiving a mating pin and another spring contact for making electrical connection to the inside conductive surface of the pin filter. Both of the aforesaid spring contacts are formed from wall portions of the metal tube, and are therefore integral with the tube itself. A wire well at the end of the tube receives the wire which is crimped into the well. A

molded plastic jacket has protruding hollow cylinders which form a jacket for the tube. The tube has an open end which receives the pins of a mating connector.



3,743,980

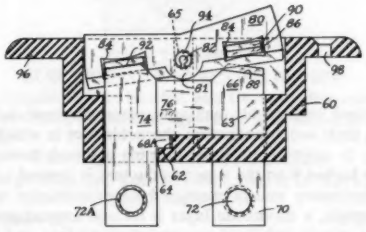
ELECTRIC SWITCH

Rudolf Steiner, 3624 Inglewood Boulevard, Los Angeles, Calif.

Filed Oct. 18, 1971, Ser. No. 189,923

Int. Cl. H01h *23/20*

U.S. Cl. 335—205 5 Claims



An electric switch having stationary structures, each consisting of a magnetic circuit portion which is energized by a permanent magnet, and an electric circuit portion which is positioned adjacent to that magnetic circuit portion and equipped for the connection with an external electric circuit, and a movable armature structure having a member capable of controlling, upon actuation and in combination with the specific magnetic forces, the magnetic circuit portion concurrently with the electric circuit portion of a like stationary structure of the electric switch.

3,743,981

CIRCUIT BREAKER

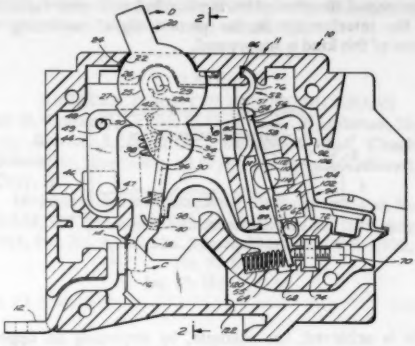
Rimas J. Geleziunas, Don Mills, Ontario, Canada, assignor to CEB Limited, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,876

Int. Cl. H01h *73/48*

U.S. Cl. 335—23 5 Claims

A circuit breaker having a trip arm which extends through a slot in a magnet and rests directly on the end of a pivoted bimetal strip. The magnet has a curved end resting loosely in a curved slot in the plastic housing of the breaker, a straight portion overlying the end of the bimetal strip, and an end section spaced away from the bimetal strip. During a short circuit the magnet, since it is free floating in the housing, is free to accelerate rapidly and slam against the bimetal strip, tripping the breaker rapidly.



3,743,982

CIRCUIT PROTECTOR

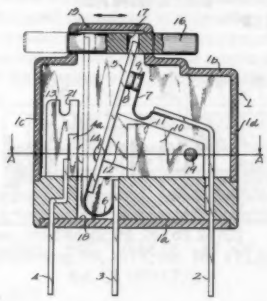
Yasuo Kasahara, Tokyo, Japan, assignor to Kabushiki-Kaisha Nakatani, Tokyo, Japan, a part interest

Filed Jan. 13, 1972, Ser. No. 217,602

Claims priority, application Japan, Jan. 19, 1971, 46/1783

Int. Cl. H01h *61/00, 53/20*

U.S. Cl. 335—208 9 Claims



A circuit protector comprises a permanent magnet secured centrally within a casing and holding as attracted to both N- and S- poles on one surface thereof a movable body of magnetic and electrically conductive material, which has its one end mounted to a terminal on the casing by means of a U-shaped spring, which also acts to bias the movable body away from the magnet. The other end of the movable body is engaged by a reset button slidably mounted on the casing. An opening and closing contact is interposed in the current path between the free end of the movable body and another terminal mounted on the casing. Upon current flow in excess of a given value across the terminals, the movable body moves away from the magnet and interrupts the circuit.

3,743,983

FOCUSSING AND DEFLECTING SYSTEM COMPRISING A FERROMAGNETIC WIRE-COIL

Benedictus Timotheus Johannes Holman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,452

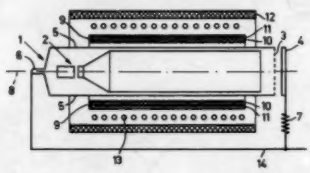
Claims priority, application Netherlands, Feb. 19, 1971, 7102201

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 9 Claims

The coil former of an electron-optical system comprising a magnetic focussing device, an electromagnetic deflecting

device and a coil former of ferromagnetic wire which is coaxially arranged therebetween, is provided with wire turns such that the interference in the picture signal occurring with systems of this kind is suppressed.



This is achieved, for example, by imparting an opposed winding sense to the winding wire for the coil former for two axial portions, or by providing a plurality of winding layers having opposed winding senses one over the other.

3,743,984

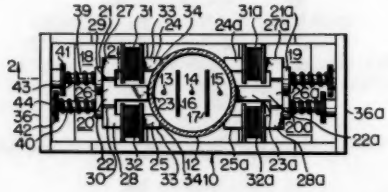
MAGNETIC CONVERGENCE DEVICE FOR USE IN AN IN-LINE TYPE COLOR CATHODE RAY TUBE

Shigeo Takenaka; Seiji Goshi, and Kazuhiko Itaka, all of Fukaya-shi, Saitama-ken, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 24, 1972, Ser. No. 237,855

Int. Cl. H01f *1/00*

U.S. Cl. 335—212 **11 Claims**



A pair of E-shaped cores are mounted radially in opposite directions on the outer surface of a neck portion of an inline type color cathode ray tube. Each of the E-shaped cores has a center leg and two side legs about which dynamic convergence coils are wound in radial arrangement relative to the neck portion so as to converge electron beams from the cathode ray tubes along the longitudinal direction of the center legs of the respective cores. First and second disc-shaped permanent magnets are rotatably mounted on a cross-piece connecting the one side ends of the respective legs, and provide adjustable static fluxes cooperating with the dynamic convergence flux by travelling through the center and side legs and across the open ends thereof.

3,743,985

CONVERGENCE SYSTEM

Muneo Nishimura, Hirakata; Kanji Machida, Moriguchi, and Koji Hiya, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 9, 1972, Ser. No. 261,399

Claims priority, application Japan, June 18, 1971, 46/52600; June 22, 1971, 46/54329

Int. Cl. H01f *1/00*

U.S. Cl. 335—212 **5 Claims**

In the static convergence for making a blue electron beam pass a point at which a red electron beam intersects with a green electron beam, a convergence system in which the static convergence operation is facilitate by preventing the magnetic force of the blue lateral magnet from adversely affecting the

red and green electron beams at the time of operating the same magnet for driving the blue electron beam.

3,743,986

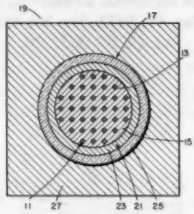
IMPROVED RESISTIVE ENVELOPE FOR A MULTIFILAMENT SUPERCONDUCTOR WIRE

Alfred D. McInturff, Bellport, and Frank J. Abbatiello, Port Jefferson Station, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 8, 1972, Ser. No. 224,465

Int. Cl. H01f *7/22*

U.S. Cl. 335—216 **7 Claims**



Improved method for making superconductors and/or improving their superconducting characteristics in which an insulating or resistive envelope forming a sheath having a resistance higher than the superconductors is formed around a multifilamentary matrix stabilized superconductor wire. In one example, a tin-bronze layer is formed around multi-filamentary, matrix stabilized superconductor wires, and the tin-bronze layer is converted, at least in part, into an insulator. Also, an indium-thalium heat sink is provided. Additionally, multifilamentary superconductor wires are provided having a copper matrix into which titanium is diffused to leave a more resistive matrix around the Nb-Ti filaments.

3,743,987

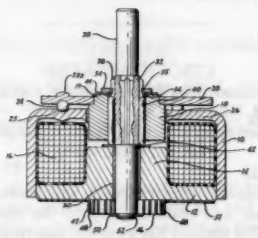
SPLINE FOR ROTARY ACTUATOR

Betty Jane Yost, Dayton, Ohio, assignor to Ledex Inc., Dayton, Ohio

Filed Sept. 5, 1972, Ser. No. 286,010

Int. Cl. H01f *7/08*

U.S. Cl. 335—228 **9 Claims**



An improved spline for drivingly connecting the armature of a rotary solenoid actuator to an output shaft driven by the armature comprises needle bearings lodged between confront-

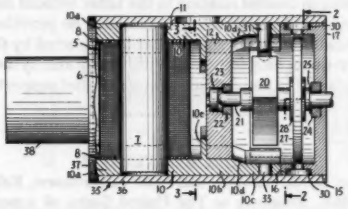
ing flutes of the armature and the driven shaft. The flutes have flat angularly disposed longitudinal walls so as to make line contact with the needle bearings.

3,743,988

ROTARY ELECTROMAGNETIC ACTUATOR OF CYLINDRICAL FORM

Donald J. Abel, Hicksville, N.Y., assignor to Sensonics, Inc., Hicksville, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,937
Int. Cl. H01f 7/14
U.S. Cl. 335—272 **7 Claims**



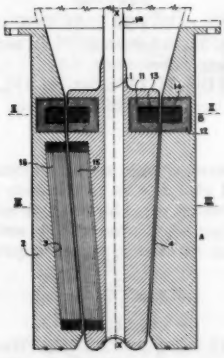
A rotary electromagnetic actuator comprises a coil having a core extending diametrically of a cylindrical casing. Parallel pole pieces of arcuate cross section extending forwardly from opposite ends of the core receive between their forward ends a rotor mounted on a shaft extending axially of the casing. A spring tends to rotate the rotor in one direction while an electromagnetic force rotates it in the opposite direction when the coil is energized. Stop pins limit the angular movement of the rotor.

3,743,989

ELECTRICAL CONNECTING DEVICE

Michel Jacques Robert Nicolas, and Christian Francois Mast, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 27, 1972, Ser. No. 292,635
Claims priority, application France, Oct. 1, 1971, 7135487
Int. Cl. H01f 33/00
U.S. Cl. 336—5 **8 Claims**



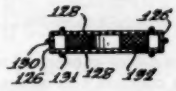
An electrical connecting device, which is immersible remote controlled and able to transmit also remote control or telemetry signals. A primary coil (15) connected to the primary circuit is arranged upon a support or rod (1) in order to be displaceable, together with the magnetic core component integral with it, relatively to the secondary coil (16) with its magnetic core portion, all this in such a fashion as to create inductive coupling for the transmission of alternating (three-phase) electrical power, and to enable said two parts to be arbitrarily interpenetrated and parted from one another, in a single operation and whatever the orientation.

3,743,990

AN INDUCTOR WITH MOUNTING MEANS

John O. Renskers, Crystal Lake; Charles S. Liebman, McHenry; Robert J. Salzman, Woodstock, and Charles E. Schroeder, Mundelein, all of Ill., assignors to Coilcraft, Inc., Cary, Ill.

Division of Ser. No. 634,789, March 6, 1967, Pat. No. 3,534,309, which is a division of Ser. No. 387,139, Aug. 3, 1964, Pat. No. 3,368,276. This application Oct. 5, 1970, Ser. No. 77,875
Int. Cl. H01f 15/10
U.S. Cl. 336—192 **3 Claims**



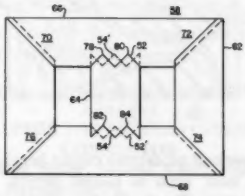
A mounted multi-lead circuit element having a plurality of leads for separate external connection comprising segments of a strip of relatively stiff insulating material having stiff parallel terminal wires secured thereacross and extending beyond said strip at both ends secured directly or indirectly to the circuit element or wrapped thereabout in supporting relation to provide at least as many of said wires as there are of said leads, the leads being secured to one end of the terminal wires and the other ends of the terminal wires being available for connection into a circuit.

3,743,991

MAGNETIC CORE STRUCTURES

John C. Gumpper, Jamestown, and Angelo A. DeLaurentis, Sharpsville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,849
Int. Cl. H01f 27/24
U.S. Cl. 336—217 **31 Claims**



Laminated magnetic cores having leg and yoke laminations which are joined together to form lamination joints. The joints include one or more convex points at one end of a leg lamination and one or more convex or concave points at the other end of the leg lamination. The points are formed by straight portions of the joint which intersect with each other either perpendicularly, acutely or obtusely. The points at different ends of the leg lamination may or may not be aligned with each other. Distribution throughout the core may be achieved by a butted-lap arrangement or by a stepped-lap arrangement, either horizontally, vertically or angularly.

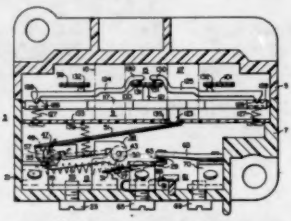
ERRATUM

For Class 337—77 see:
Patent No. 3,743,977

3,743,992
THERMALLY RESPONSIVE ELECTRICAL CONTROL DEVICE FOR POLYPHASE CURRENTS

James B. Ramsey, and Paul T. Anderson, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,940
Int. Cl. H01h 3/12, 71/16
U.S. Cl. 337—48 5 Claims

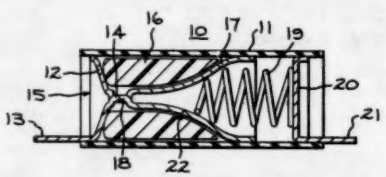


An electrical control device or overload relay characterized by relatively movable contacts with means for operating the contacts between open and closed positions and comprising an actuating bar, a plurality of pole units, each pole unit comprising an actuating bimetal element including an intermediate element and an outside element on each side thereof, the bimetal elements being spaced apart and disposed on one side of the actuating bar, a pair of levers between the bimetal elements and the actuating bar, one lever having one end portion in pivotal contact with the actuating bar and having another end portion in pivotal contact with the intermediate bimetal element on the side of the bimetal element opposite the actuating bar, and each lever having an intermediate portion in pivotal contact with the corresponding outside bimetal element and on the side thereof facing the actuating bar.

3,743,993
THERMAL OVERLOAD PROTECTIVE DEVICE

Robert P. Alley, and Mason H. Earing, both of Danville, Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 2, 1972, Ser. No. 222,952
Int. Cl. H01h 87/00
U.S. Cl. 337—114 8 Claims



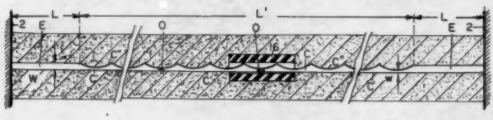
A thermal overload protective circuit breaker for removing power from a load, such as ballast device, when the load becomes overheated. The thermal overload protective circuit breaker uses an actuator, including a thermally expansible material, to separate the contacts, which are spring biased in a closed circuit position. The spring anneals on severe overloads causing the thermal overload protective circuit breaker to fail safe.

3,743,994
RIBBON-TYPE FUSIBLE ELEMENT FOR HIGH-VOLTAGE FUSES AND FUSE INCLUDING THE ELEMENT

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed June 26, 1972, Ser. No. 266,406
Int. Cl. H01h 85/04
U.S. Cl. 337—159 16 Claims

A fusible element for a full range clearing ability fuse for elevated circuit voltages such as, for instance, 5 to 15 kV. The fusible element has a configuration adapted to result in a wirelike time-current curve when forming part of a fuse. The fusible element has a center portion which is undulating on one side thereof and has end portions which are not undulating. The fusible element is wound helically and supported in a

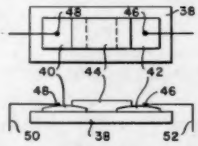


tubular casing in coaxial relation to the latter without resort to a supporting mandrel thereof. The fuse may be provided with several helically wound fusible elements supported by the pulverulent arc-quenching filler inside the casing and by means of special beads and in the absence of any mandrel support.

3,743,995
TWO COLOR DETECTOR

H. Raymond Riedl, Adelphi, and Peter Scharnhorst, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1972, Ser. No. 234,628
Int. Cl. H01c 7/08
U.S. Cl. 338—15 17 Claims

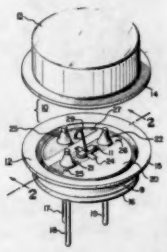


A two color detector capable of detecting and distinguishing between two different wavelength bands of electromagnetic radiation, one in the visible — 3μ range and one in the 3μ – 12μ range, comprising an amorphous film of $[Ge_{1-y}(Pb_{1-z}Sn_z)_y]_xTe_{1+x}$ wherein $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$ contacting a material which strongly absorbs radiation in the 3μ – 12μ wavelength range.

3,743,996
PROTECTIVE PADS FOR ELECTRICAL DEVICES

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,218
Int. Cl. H01c 7/12
U.S. Cl. 338—21 9 Claims



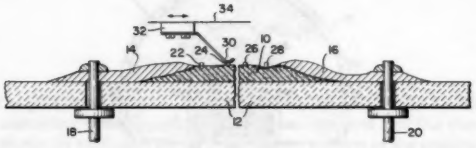
A plurality of elongated lead-in electrodes are hermetically sealed in a wafer of metal oxide varistor material and extend therethrough. The portions of the wafer in contact with said electrodes are spaced to provide a current flow between the electrodes which is low when normal operating voltage appears across the electrodes and when voltages in excess of nor-

mal voltage appear progressively thereacross a rapidly decreasing impedance is presented by the wafer in accordance with the alpha of the body of material, thereby limiting the voltage appearing between the electrodes.

3,743,997
UNITARY RESISTOR AND SHUNT

Sergei Schebalin, Ambler, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 10, 1971, Ser. No. 122,777
Int. Cl. H01c *13/00*
U.S. Cl. 338—49 **7 Claims**

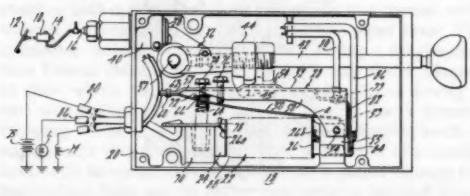


A unitary resistor film and shunt and a method of producing same for use as a resistor element per se or as the resistance element of a linear, nonlinear or characterized potentiometer. A conductive material is screened and fired onto the resistor film at a location that is spaced inwardly of end portions of the resistor in such a manner that a negligible amount of diffusion occurs between the conductive and resistive film material to thereby reduce the resistivity of the resistor film, e.g., ten fold without incurring any change in its original size, temperature coefficient of resistivity or stability.

3,743,998
ELECTRIC BRAKE CONTROLLER

Edward G. Sturgeon, Orchard Lake, Mich., assignor to Syncro Corporation, Oxford, Mich.

Continuation of Ser. No. 158,388, June 30, 1971, abandoned. This application Apr. 10, 1972, Ser. No. 242,856
Int. Cl. H01c *5/04*
U.S. Cl. 338—96 **16 Claims**



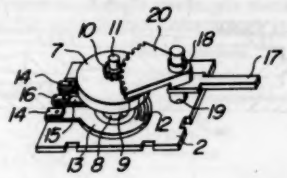
A brake controller for an electric brake which can be operated either manually or by hydraulic fluid from an associated hydraulically operated brake system and in which improved modulation of the electric brake applying current and economies and improvements in assembly and adjustment are achieved.

3,743,999
LEVER-OPERATED VARIABLE RESISTOR

Akitoshi Miyashita, Suita, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1971, Ser. No. 192,184
Claims priority, application Japan, Oct. 26, 1970, 45/106699
Int. Cl. H01c *5/00*
U.S. Cl. 338—118 **4 Claims**

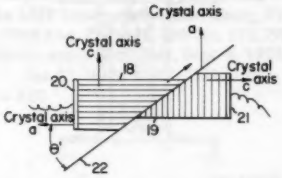
A lever-operated variable resistor which retains the advantages of the conventional linear slide variable resistor in which the position of a lever or knob is identified at a glance, while eliminating the drawback that fine adjustment is difficult to achieve. Gear engagement is utilized to enable a contactor to cover a longer sliding distance with respect to a small sliding angle of the lever, thereby making possible the use of high power for a resistance element and improving the adjustability of resistance value.



3,744,000
VARIABLE RESISTOR

Seishi Yajima; Toshio Hirai, both of Sendai; Toshikatsu Ishikawa, Tokyo, and Toshio Masuyama, Yokohama, all of Japan, assignors to Nippon Carbon Company Limited, Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,237
Int. Cl. H01c *13/00*
U.S. Cl. 338—150 **1 Claim**



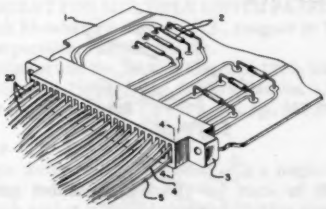
This variable resistor uses a block cutout from pyrolytic graphite or its alloy whose electrical specific resistance in a crystal axis c is different from that in a crystal axis a. The block is provided at its diametrically opposite portions with a pair of contacts to form an electrical conductive passage therebetween.

An angle θ of the electrical conductive passage inclined from the crystal axis a is made changeable to vary the resistance value across the pair of contacts.

3,744,001
FILTER ADAPTOR FOR PRINTED CIRCUIT BOARD CONNECTOR

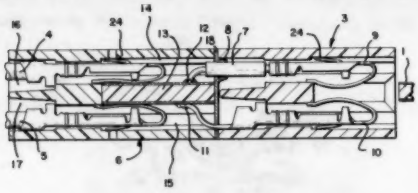
Ferdinand William Schor, Goleta, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1971, Ser. No. 147,560
Int. Cl. H01r *3.06*
U.S. Cl. 339—14 R **8 Claims**



A filter adaptor capable of being quickly inserted between two adjacent leads feeding into a printed circuit (PC) board connector.

The adaptor comprises an insulating body having two spring contacts for insertion into the PC board connector, a low pass



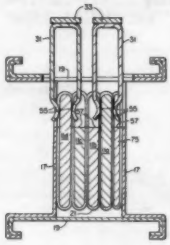
filter, and a contactor within said body for establishing contact between incoming leads and the filtered contacts.

3,744,002

BUS DUCT WITH PLUG-IN UNIT FOR CLOSELY SPACED BUS BARS

Charles L. Weimer, Patterson Heights, and Montgomery T. Popovich, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 30, 1972, Ser. No. 267,813
Int. Cl. H02g *5/02*
U.S. Cl. 339—22B **6 Claims**



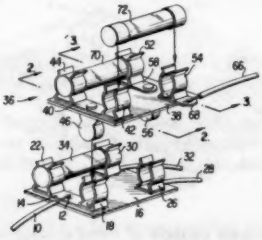
A section of bus duct with plug-in power take-off outlets in which there are a set of a plurality of elongated unitary bus bars having a pair of opposite wide faces and a pair of opposite narrow faces, the bus bars being insulated and disposed in surface-to-surface compact relationship within an elongated housing in which there is at least one opening in the housinb side facing the narrow faces of the bus bar, which opening is adapted for use with a plug-in element, the plug-in element having a plurality of pairs of spaced stabs engageable with an uninsulated edge portion of a corresponding bus bar, and the bus bars on opposite sides of the uninsulated portion of bus bar having notches adapted to receive the spaced stabs engageable with said uninsulated portion.

3,744,003

FUSE ADAPTER

George Dipace, Ogallala, Nebr., assignor to 3 B&D Products, Inc., Ogallala, Nebr.

Filed Nov. 12, 1971, Ser. No. 198,330
Int. Cl. H01h *85/54, 85/60;* **H01r** *29/00*
U.S. Cl. 339—31 B **6 Claims**



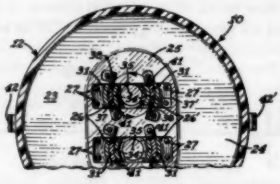
A fuse block adapter by which a fused circuit may be added to an existing fuse block utilizing available fuse clips without tools and without disrupting existing circuitry. Other fuse circuits may be provided by the stacking of the adapters.

3,744,004

PRESS FIT OUTLET JUNCTION BOX WITH MEANS FOR DETACHABLY INTERLOCKING WITH ELECTRICAL CORD

Lewis R. Kinsey, 108 South 25th Street, Phoenix, Ariz.

Filed Aug. 13, 1971, Ser. No. 171,459
Int. Cl. H01r *13/54*
U.S. Cl. 339—74 R **7 Claims**



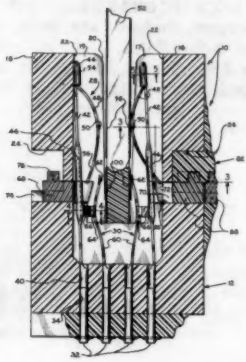
Electrical outlet receptacle adapted to be press fitted into an opening and provided with interlocking means for detachably connecting with the prongs of electric plugs.

3,744,005

ZERO FORCE TYPE CONNECTOR BLOCK

Fred C. Sitzler, Mechanicsburg, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed July 2, 1971, Ser. No. 159,179
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **15 Claims**



A zero force connector block having a number of snap-over-center type terminals arranged along a circuit board receiving slot and a cam bar operable to engage the terminals serially and move contact portions on the terminals into engagement with a contact on a circuit board inserted into the slot. As the terminals move into engagement with the circuit board they move other terminals into engagement with different contact portions of the circuit board.

3,744,006

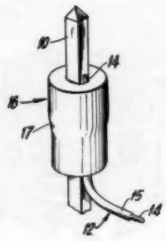
EXTRUSIBLE ELECTRICAL CONNECTOR AND CONNECTION METHOD

Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Feb. 9, 1971, Ser. No. 113,833
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **9 Claims**

An extrusible electrical connector comprised of a sleeve having axially spaced portions of different diameters and con-

structed of a ductile material. The connector is best adapted to making connections to a terminal post, wherein a bare terminal end of an insulated conductor is inserted together with



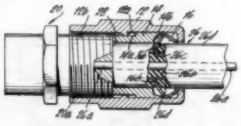
the post into the aperture of the sleeve, after which the ductile connector is compressed tightly about the post and the conductor by extruding the larger diameter portion of the connector through a die.

3,744,007

THREE-PIECE COAXIAL CABLE CONNECTOR

Martin S. Horak, Morganville, N.J., assignor to Vikos, Inc., Hoboken, N.J.

Filed Oct. 1, 1971, Ser. No. 177,190
Int. Cl. H01r *13/38*; H02g *15/02*
U.S. Cl. 339—97 R **3 Claims**



A three-piece connector is provided which may be securely attached both mechanically and electrically to a coaxial cable without requiring the removal of the cables outer cover. The connector includes a connector body having a longitudinal bore formed therein, an axially-movable cam sleeve adapted to slide within the longitudinal bore, the sleeve having a camming surface formed on one end thereof, and a serrated crimping washer having inwardly directed crimping teeth in engagement with the camming surface. The end of a coaxial cable with its center conductor exposed is pulled through the longitudinal bore and its center conductor is inserted into a lock nut. The connector body is then screwed onto the lock nut with the forward end thereof actuating the cam sleeve within the longitudinal bore, driving the crimping teeth inwardly to penetrate the cables outer sheath and into engagement with the outer conductor of the coaxial cable to effect a positive ground connection and to lock the coaxial cable within the connector.

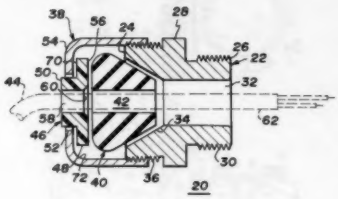
3,744,008

STRAIN RELIEF ASSEMBLY

Edward J. Castellani, South Plainfield, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 23, 1971, Ser. No. 201,324
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 B **7 Claims**

An improved strain relief assembly including an apertured, stepped-diameter pressure ring formed preferably of non-metallic material and which may be selectively structured to partially envelope and nonrotatably grip the adjacent surface of a tapered compressible grommet for linearly urging said grommet into a complementarily tapered receiving orifice in a threaded body member while engaged in slidable relation with the adjacent inner surface of a gland nut threadably securable to the body member. The grommet may thus be tightly and symmetrically compressed about an elongate member such as a portable electric cord inserted therethrough to provide a



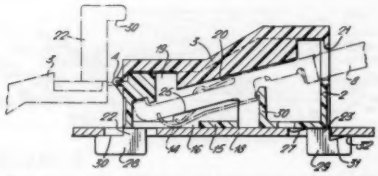
strain relief and seal thereabout. The gripping feature may be enhanced by the inclusion of selectively disposed pointed protrusions or radially extending ridges or the like on the pressure ring gripping surface. The ring may be peripherally undercut to permit the inward deflection of a portion thereof to provide an additional strain relief and sealing zone.

3,744,009

PCB SURFACE CONNECTOR

Wladimiro Teagno, and Franco Trevisiol, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 11, 1971, Ser. No. 170,799
Claims priority, application Italy, Sept. 5, 1970, 29407 A/70
Int. Cl. H01r *13/48*; H05r *1/02*
U.S. Cl. 339—128 **3 Claims**



A PCB surface connector has a contact box closed by an integrally hinged lid from which extend four rigid legs engageable at their feet in respective apertures in a board. Lateral sliding of the box on the board registers the feet with the board underside and a detent projecting from the box snaps into one of the apertures to latch the box in position. The legs support contact pressure of springs projecting from the box against the board surface and resist pull off vertically in relation to the board and in two lateral directions at right angles.

3,744,010

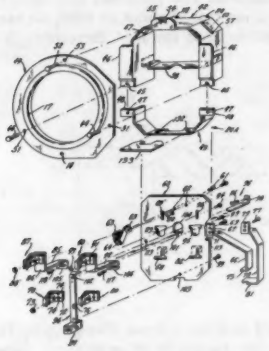
SOCKET FOR MULTIPLE METER PANEL

James Frank Meacham, Bellmawr, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Continuation of Ser. No. 26,461, March 5, 1970, which is a division of Ser. No. 790,097, Jan. 9, 1969, Pat. No. 3,530,340. This application June 12, 1972, Ser. No. 262,093
Int. Cl. H01r *21/02*
U.S. Cl. 339—157 R **5 Claims**

A multiple meter panel is provided with a single openable cover having individual openings for each of the meter sockets. Each socket is provided with a locking ring and the cover openings are large enough so that the cover may be opened without the necessity of removing any of the meters or breaking any of the meter locking seals or removing any meter locking collars. Line busing at the panel interior is enclosed in

a housing disposed within the panel case so that when the cover is open all line or unmetered busing is protected. Transverse extensions of the bus bars facilitate energization thereof as well as electrical connection to bus bars of adjacent panels in multiple panel installations.

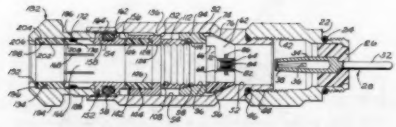


3,744,011

COAXIAL CABLE CONNECTOR

John Philip Blanchenot, Ontario, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,608
Int. Cl. H01r 17/04
U.S. Cl. 339—177 R **6 Claims**



A coaxial cable connector for securing the inner and outer conductors of the cable to the connector. A radially deformable inner conductor seizing member is formed on an insulating member which can be locked to the inner conductor of the cable by application of an axial force to the seizing member. The seizing member may contain a metallic bushing positioned within the insulating member and threaded so as to secure the bushing to the inner conductor. Further, a grounding spring member for preventing radio frequency leakage from the connector member can be mounted in the connector housing. The grounding spring member may contain a plurality of spring fingers biased inwardly toward the outer conductor.

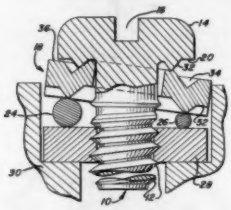
3,744,012

TEETER TERMINAL CLAMP

Charles E. Gutshall, Schaumburg, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Apr. 6, 1972, Ser. No. 241,581
Int. Cl. H01r 9/10
U.S. Cl. 339—246 **13 Claims**

The teeter terminal clamp for removably securing the terminal portion of a single conductor or two conductors of the same or different diameter comprises a threaded shank having a head for rotating the shank, the head having an underhead surface with at least one, integrally-formed, substantially-circular or oval protrusion surrounding the shank and intermediate the inner and outer extremity of the underhead surface; a clamping plate substantially centrally apertured and assembled loosely and tiltably on the shank adjacent the head, the plate having on the side adjacent the head at least one, substantially-circular or oval recess complementing the shape of the protrusion whereby the extremity of the protrusion registers with an intermediate portion of the inner wall of the recess when the protrusion and recess are in registration, the plate also having on the other side conductor-engaging, antipullout surface irregularities; and means for retaining the plate on the shank adjacent the head.

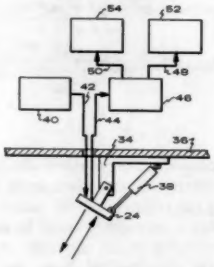


3,744,013

METHOD FOR SEARCHING A MEDIUM

Robert A. Lapetina, Salt Lake City, Utah, assignor to Edo Western Corporation, Salt Lake City, Utah

Continuation of Ser. No. 884,538, Dec. 12, 1969, abandoned.
This application Jan. 20, 1972, Ser. No. 232,521
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **18 Claims**



A method for searching a medium such as the subbottom of a body of water which includes transmitting a plurality of energy waves from a source through the medium to be searched, recording the energy wave reflection reflected by the medium at a predetermined point for each of a plurality of laterally spaced energy waves transmitted through the medium to produce an energy wave reflection recording of a section of the medium, and scanning the energy wave reflection recording to locate continuous areas of similarly recorded wave reflection intensity. A plurality of energy wave reflection recordings can be produced for spaced sections of the medium.

3,744,014

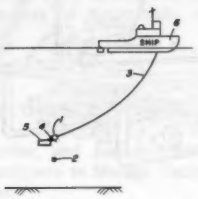
SUS CABLE TROLLEY

Albert H. Greenlaw, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,566
Int. Cl. B63b 21/00
U.S. Cl. 340—3 T **12 Claims**

A system providing a cable trolley which will launch an underwater sound signal directly beneath a hydrophone. The distance between the two can easily and accurately be deter-

mined which will establish the level of acoustic energy produced. In operation, the rollers of the trolley are placed on the cable which has a hydrophone mounted at the bottom thereof and a stop plate directly above the hydrophone. An L-shaped rod on the trolley is depressed to retract a pin in a U-



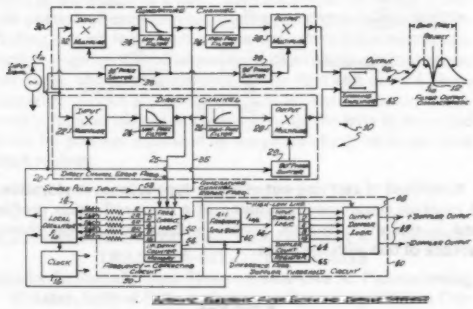
shaped block which receives and engages a ring. A cable is then attached to the ring and to an underwater sound signal. The trolley carrying the signal travels down the cable until the L-shaped rod strikes the stop plate adjacent the hydrophone which releases the ring and thus the signal.

3,744,015

AUTOMATIC ELECTRONIC FILTER SYSTEM

Robert L. Marimon, Arcadia; Robert L. Matthews, Pasadena, both of Calif., and Michael D. Maughan, deceased, late of Salt Lake City, Utah (by Thera Maughan, administratrix), assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1972, Ser. No. 244,184
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D **6 Claims**



A combination bandpass and rejection filter system having a null point at a center frequency, comprising:

a local oscillator for generating any of a range of basic frequencies, a specific one comprising a center frequency f_{LO};

a direct channel filter circuit connected to the output of the local oscillator and adaptable for connection to an input signal f_{in}, generally containing low and high frequency components;

a quadrature channel filter circuit connected to the output of the local oscillator and adaptable for connection to the same input signal, f_{in}, the signal propagating through this filter circuit containing low and high frequency components having a phase angle with respect to corresponding low and high frequency components in the direct channel input filter; and

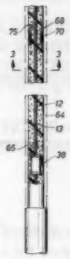
a summing amplifier connected to the direct and quadrature channel filter circuits, which vectorially sums the low and high frequency components from each filter circuit in a manner so that wanted components are enhanced and unwanted components are diminished, with a null point at the center frequency f_{LO}.

3,744,016

FOAM SEISMIC STREAMER

Billy W. Davis, Flagstaff, Ariz., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,547
Int. Cl. H04b 13/02; G01v 1/02
U.S. Cl. 340—7 R **7 Claims**



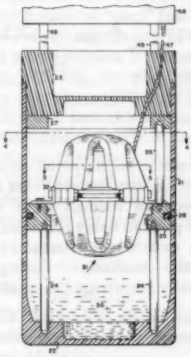
A neutrally buoyant seismic hydrophone streamer is constructed by extruding a syntactic foam material comprising an elastomeric material and gas filled microspheres onto a central stress member to form an elongated streamer member. The streamer may then be covered with a suitable water and oil resistant, abrasion resistant covering and be provided with exteriorly affixed hydrophones, or hydrophones can be affixed to the foam core and an outer protective sheath can be extruded or otherwise provided around the streamer and the hydrophones to provide a uniform diameter streamer assembly. Extrusion is effected utilizing a suitable elastoplastic material which can be extruded at temperatures below about 300 psi to avoid bursting the gas filled spheres of the syntactic foam.

3,744,017

DIRECTIONAL HYDROPHONE

John C. Dale, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed May 6, 1970, Ser. No. 34,945
Int. Cl. H04b 13/00
U.S. Cl. 340—8 **6 Claims**

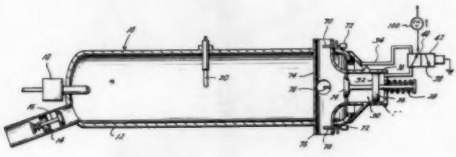


A hydrophone for detecting low level sources of underwater pressure waves in the presence of ambient noise which includes a housing in which is mounted a magnetic structure having a radial air gap in which a sensing coil is resiliently mounted for axial movement and which hydrophone is mounted with the axis of the coil approximately vertical.

3,744,018
METHOD OF AND APPARATUS FOR PRODUCING A REPETITIVE SEISMIC IMPULSE

Charles D. Wood, III, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 22, 1971, Ser. No. 210,764
Int. Cl. H04b *13/00*
U.S. Cl. 340—12 SD 6 Claims

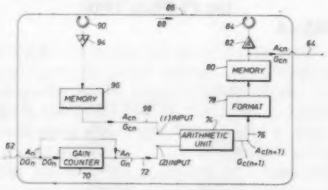


The improvement in the method and apparatus of producing a seismic source in water by a combustive explosion by reducing the oscillation of the explosive exhaust gas bubble in the water thereby reducing extraneous seismic impulses. Injecting an air/fuel mixture of less than the stoichiometric quantity into the chamber to provide an excess of air, and after the mixture has been exploded and released into the water, injecting additional fuel into the free air in the exhaust gases which provides additional combustion to increase the pressure in the exhaust gases to dampen the oscillation of the pressure in the gases. Injecting additional fuel into the hot exhaust gases and excess air for maintaining the exhaust gas bubble pressure at or above the water pressure surrounding the exhaust gases.

3,744,019
SEISMIC COMPOSITION SYSTEM

Arthur Norman Schmitt, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Continuation of Ser. No. 795,596, Jan. 31, 1969, abandoned.
This application Aug. 19, 1971, Ser. No. 173,271
Int. Cl. G01v *1/36*
U.S. Cl. 340—15.5 GC 6 Claims



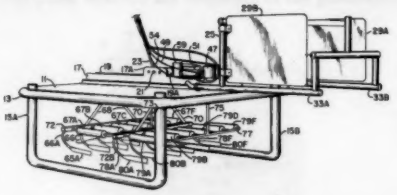
This invention relates to an improved method and apparatus for field compositing signals derived from a seismic exploration system. Consecutive records from seismic shots are suitably composited prior to being recorded, while portions of the records which exceed predetermined threshold levels become automatically conditioned during the compositing process thereby greatly improving the quality of the obtained seismic records.

3,744,020
MARINE SEISMIC SOURCE

Robert A. Kirby, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Sept. 22, 1971, Ser. No. 182,797
Int. Cl. H04b *13/00*
U.S. Cl. 340—12 SD 7 Claims

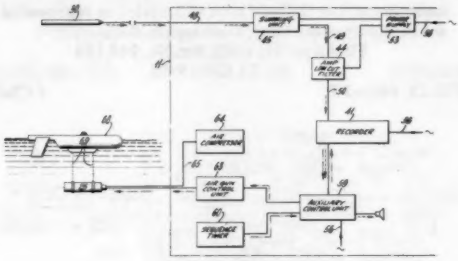
A marine seismic source is described including an enclosure for containing a large quantity of gas. Disposed beneath the enclosure are one or more controlled seismic sources, preferably of the type wherein an explosive gaseous mixture is detonated within an expansible enclosure. Means are provided for the purpose of towing the source at a determinable depth from a vessel, and for stabilizing the apparatus during towing operations.



3,744,021
OFFSHORE SEISMIC EXPLORATION METHOD

James D. Todd, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 13, 1971, Ser. No. 162,104
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 TC 7 Claims

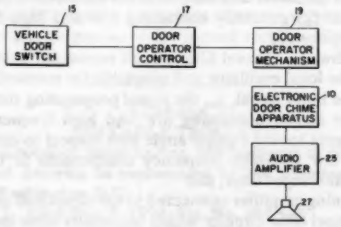


A method of carrying out offshore-type seismic exploration. It involves simultaneous running of a deep-reflection profile and a shallow-reflection profile without substantial interference of one with the other.

3,744,022
TRANSIT VEHICLE DOOR SIGNAL APPARATUS

Robert M. Olsen, Barrington, Ill., assignor to The Vapor Corporation, Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 214,273
Int. Cl. B60q *5/00*
U.S. Cl. 340—52 R 9 Claims



A signal apparatus for use with the moving doors of transit vehicles or the like and which preferably takes the form of an

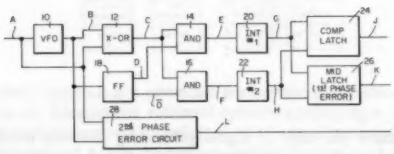
electronic door chime means simulating the tonal quality of electromechanical chimes by using an arrangement of solid state components and thereby eliminating the use of moving parts. The door chime means includes first and second switching means, first and second decaying network responding to the switching means and driving first and second tone generators, and a time delay means between the first and second switching means to sequentially trigger the tone generators.

3,744,023

DETECTION AND CORRECTION OF PHASE ENCODED DATA

Anthony L. Carpentier, and Juan A. Rodriguez, both of Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed May 17, 1971, Ser. No. 144,076
Int. Cl. G11b 27/36
U.S. Cl. 340—146.1 F **11 Claims**



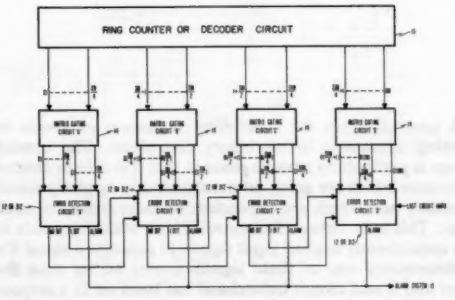
Phase encoded data on multi-track magnetic tape is decoded by integration detection. A first phase distortion check is made after the integration detection of the data on each track to detect a failure of the integration to reach a threshold level above or below the integrator squelch level. A second phase distortion check is made of the data on each track to determine if a data transition occurred within a certain portion of each bit cell. Each byte of data on the tape including one bit from each track is then stored in an error correction register. Simultaneously, a dead track register stores any phase check bit generated by the first and second phase distortion checks. If a parity check of the byte in the error correction register indicates a lack of parity, the byte is corrected in the bit position indicated by the phase check bit in the dead track register.

3,744,024

CIRCUIT FOR DETECTING THE PRESENCE OF OTHER THAN ONE-BIT-OUT-OF-N BITS

Stanley L. Russell, West Webster, and Uwe A. Pommerening, Webster, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,886
Int. Cl. H03k 13/32
U.S. Cl. 340—146.1 AB **7 Claims**



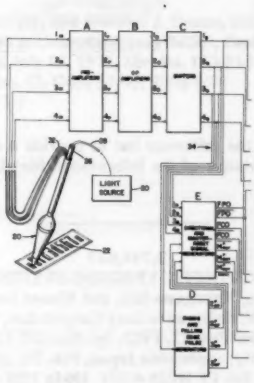
A monitoring circuit is provided to detect a predetermined number of bits of information impressed on a plurality of signal lines. The monitoring circuit combines the plurality of signal lines into separate groups arranged so that each of the plurality of lines is common to two of the separate groups. The separate groups are next divided into two sets of groups arranged so that each of the two groups having a common signal line is in a different one of the sets of groups. Provision is then made to detect the presence of a predetermined number of bits of information in at least one of the sets of groups.

3,744,025

OPTICAL CHARACTER READING SYSTEM AND BAR CODE FONT THEREFOR

Ilhan M. Bilgutay, 1031 Crestview Drive, Apt. 209, Mountain View, Calif.

Filed Feb. 25, 1971, Ser. No. 118,771
Int. Cl. G06m 9/18
U.S. Cl. 340—146.3 Z **30 Claims**



An optical character reading system comprising a hand-held probe device for scanning a printed font to produce an output adapted for driving a printed readout display or producing digital inputs to data storage or computing apparatus. The font is comprised of bar code symbols which can form humanly recognizable alphanumeric characters. At the tip of the probe device are means for transmitting a bright light and means for receiving reflected light at spaced apart windows. The light receiving means of each window is connected to an electrical signal producing element so that as the device scans over a series of characters, each window "sees" the reflective and non-reflective areas and output signals are produced which provide information as to the relative locations of reflective and non-reflective areas and also the number of non-reflective edges passed during scanning and these signals provide input data to logic circuitry that includes means for compensating for variations in the direction of scanning or orientation of the probe with respect to the character block; means for identifying variables and characters of the printing font and for producing and storing representative data outputs and also error-checking components for assuring the accuracy of the data outputs.

3,744,026

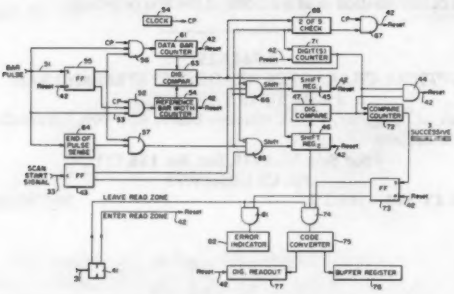
OPTICAL LABEL SCANNING

Gerald Wolff, Framingham, Mass., assignor to Identicon Corporation, Waltham, Mass.

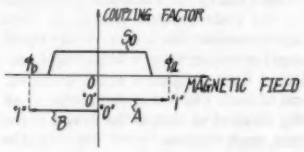
Filed June 10, 1970, Ser. No. 44,910
Int. Cl. G06k 7/14
U.S. Cl. 340—146.3 Z **13 Claims**

A width-coded, self-calibrating label according to the invention includes an initial bar of reference width followed by subsequent bars that are either significantly narrower or significantly wider than the calibration bar to designate binary zero and one, respectively, in a binary coding system. A scanning

system scans the labels to first provide a reference signal representative of the width of the initial reference bar and then signals representative of the widths of the other bars relative to that of the reference bar to provide a digital number signal representative of the information binarily encoded on the label.



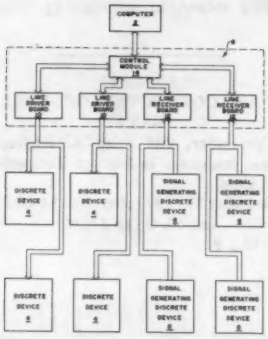
3,744,027
MAGNETIC VERIFING SYSTEM
Saburo Uemura, Kanagawa-ken, and Muneo Iwamoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 22, 1972, Ser. No. 227,750
Claims priority, application Japan, Feb. 25, 1971, 46/1154
Int. Cl. H01h 47/34; H04q 3/00
U.S. Cl. 340—147 MD **8 Claims**



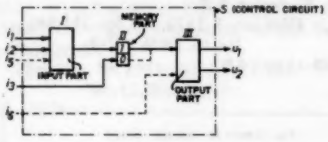
An electronic indicating device is responsive to a source of high frequency current transmitted through a plurality of cascade connected, saturable core transformers. The transmission of the current is blocked by the application of a first magnetic field of predetermined strength and direction to saturate selected transformers. The transmission of the current is restored by the application of a second magnetic field to the selected transformers which substantially cancels the effect of the first field.

3,744,028
DISCRETE CONTROLLER
Robert T. Kirk, Ogden, Utah, assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 1, 1972, Ser. No. 230,706
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 **9 Claims**

A discrete controller for interfacing between a computer and a plurality of discrete devices, said discrete controller comprising a plurality of line driver cards each interfacing with a respective plurality of computer-switchable discrete devices; a plurality of line receiver cards each interfacing with a respective plurality of signal-generating discrete devices; and a control module interfacing between said computer and said line driver and line receiver cards.



3,744,029
PROGRAMMABLE SEQUENTIAL CONTROL MEANS HAVING A PLURALITY OF CONTROL CIRCUITS FOR CONTROLLING A RESPECTIVE PLURALITY OF DISCRETE SUBOPERATIONS
Bengt Ebbe Harald Nyman, Rockford, Ill., assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Apr. 22, 1970, Ser. No. 30,909
Claims priority, application Sweden, Apr. 25, 1969, 5941/69
Int. Cl. F15b 21/02, 11/22
U.S. Cl. 340—172.5 **19 Claims**

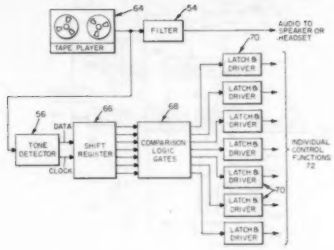


A control means for controlling sequences of events or working operations in machinery and plants. The control means is particularly advantageous in that it is able to control sequences which are going on simultaneously or partly simultaneously and which are dependent or independent of each other. This is by virtue of a control circuit which responds to two concurrently applied input signals to generate a signal if a predetermined one of these signals arrives earlier than the other and if said circuit beforehand has been set in a responsive condition by means of a third input signal, the generated signal being supplied to program means for controlling the sequences of the working operations.

3,744,030
INTRINSIC CONTROLS FOR INFORMATION RETRIEVAL SYSTEMS EMPLOYING DIGITAL CODES INTEGRAL WITH AUDIO INFORMATION

Maynard J. Kuljian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 28, 1971, Ser. No. 138,173
Int. Cl. G05b *19/16*; G06f *9/00*
U.S. Cl. 340—172.5 **5 Claims**



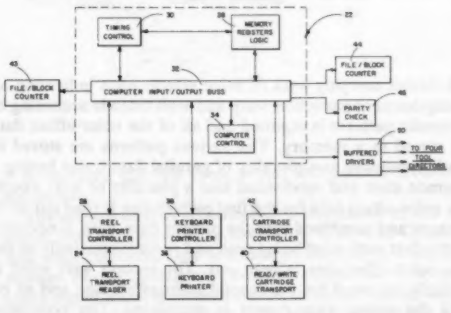
Intrinsic controls are provided for certain automatic functions in an information retrieval system, employing a digital code formed of a series of selected numbers of cycles, e.g., "-tone bursts" of a low frequency within the low end of the audio frequency range. The code format includes a plurality of bits which form a word, wherein the first bit identifies the beginning of the word, the next two bits identify the class of data, and the last of the plurality of bits represents the control data. The code is entered by the programmer along with the information, via a system controller (e.g., computer) and a program encoding system which generates the code in the form of low frequency tone bursts and mixes same with the information.

During retrieval reproduction of the information the low frequency tone bursts representing the code are separated and detected to provide the desired controls for the certain automatic functions of the information retrieval system.

3,744,031
METHOD AND APPARATUS FOR RECORDING AND VERIFYING MAGNETIC TAPE PROGRAMS FOR MACHINE TOOLS

Theodore P. Avery, Los Angeles, and Ralph P. Hubbard, Lynwood, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed May 19, 1971, Ser. No. 144,927
Int. Cl. G05b *15/00*
U.S. Cl. 340—172.5 **12 Claims**

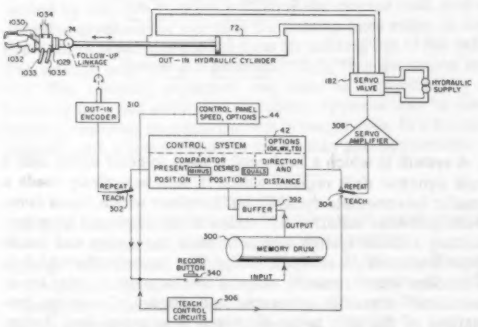


A tool-operating copy of a magnetic tape program for a machine tool is made from a master tape that has been produced by a large-scale computer. The master tape is scanned and a desired program therefrom is read into the memory of a small interfacing computer. The output of the interfacing computer is used to reproduce the selected program in a cartridge tape unit which provides the actual tool-operating copy. While the copy is being made, information temporarily stored in the interfacing computer is printed out for visual identification. Portions of the program determined to be in error by visual insepction, or portions desired to be changed, are fed back into the interfacing computer through a keyboard device to correct the appropriate parts of the program contained within the interfacing computer memory and also correct the cartridge operating copy.

3,744,032
STATIONARY BASE PROGRAMMED MANIPULATOR ARRANGEMENT FOR CONTINUOUSLY MOVING WORKPIECE

Joseph F. Engelberger, and Maurice J. Dunne, both of Newton, Conn., assignors to Unimotion, Inc., Bethel, Conn.

Filed July 15, 1971, Ser. No. 163,014
Int. Cl. G06f *15/46*; B25j *9/00*
U.S. Cl. 340—172.5 **47 Claims**



A stationary base programmed manipulator arrangement is provided for cooperation with workpieces on a continuously moving conveyor. The manipulator arm is mounted for movement about a vertical axis to follow a workpiece on the conveyor and execute a predetermined pattern of operations on each workpiece as it moves past the manipulator station. The manipulator may be programmed by successively stopping the workpiece at different closely spaced locations along the conveyor path, successively moving the manipulator arm to positions corresponding to different points on a representative workpiece when said workpiece is positioned at said different locations, and recording said corresponding positions to which said arm is successively moved.

In the alternative, the manipulator arm may be programmed in a so-called "limp hand" mode of control, wherein the manipulator arm is programmed to move rapidly to each new point on the workpiece at which an operation such as a spot weld, is to be performed. While the spot weld is being made and the welding jaws are clamped to the moving workpiece the actuators of the manipulator are disabled so that the arm is permitted to move in synchronism with the workpiece by virtue of the connection of the welding jaws to the moving workpiece. As soon as the spot weld is completed, control is restored to the manipulator arm actuators and the manipulator arm is moved ahead to the next programmed spot weld point. A compensating arrangement may also be provided to overcome the frictional drag of the manipulator arm actuators so that the limp arm may be moved by engagement with the moving workpiece without damaging the workpiece. A disabling arrangement may also be provided for the manipulator

arm actuators whenever the manipulator arm deviates from a desired work path by a predetermined amount.

With either type of programming, the recorded program may be shifted from one program step to the next under the control of a conveyor synchronizing signal derived from and representative of the movement of the conveyor even though the manipulator arm has not completed the movements called for in each axis by the previous program step.

3,744,033

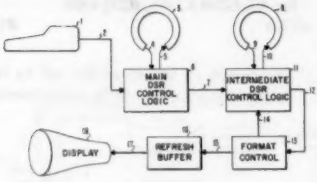
TEXT FORMATTING FOR DISPLAY

William Weller Boyd, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,798

Int. Cl. G06f 3/14

U.S. Cl. 340—172.5 **5 Claims**



A system in which a keyboard is used to enter codes into a bulk dynamic shift register which in turn selectively loads a smaller intermediate dynamic shift register which, upon command provides unformatted codes to be displayed to a formatting control system which formats the codes and loads them into a refresh or frame buffer. The frame buffer which is a random access memory outputs the formatted codes to an associated character generator and display. Complete formatting of the data to be displayed is accomplished during loading of the refresh buffer. No formatting is done between the refresh buffer and the character generator since the formatting performed prior to the loading of the characters in the refresh buffer is complete such that the data stored in the refresh buffer is identical to the data and format which would occur on printout if the unformatted characters from the intermediate dynamic shift register were input to a printer. During formatting an electronic tab stop is used, and the tab stop locations may be changed without the reentering of text characters. Further, during formatting, in the event that a format step cannot be completed prior to the output of another character from the intermediate shift register, the intermediate shift register is stopped to allow completion of the long format step. This situation usually occurs during a tab operation or a word underscore operation. If the long format operation can not be completed prior to the dying of the dynamic shift register, the shift register will be timed out and automatically rotated for another cycle to rejuvenate it.

3,744,034

METHOD AND APPARATUS FOR PROVIDING A SECURITY SYSTEM FOR A COMPUTER

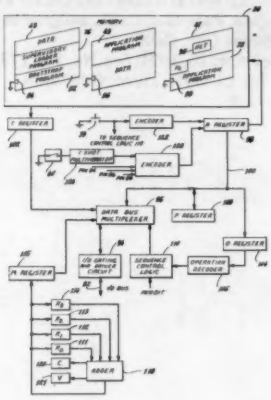
Gerard T. Paul, Weston, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 27, 1972, Ser. No. 221,246

Int. Cl. G06f 11/04

U.S. Cl. 340—172.5 **9 Claims**

A security system for a computer provides reliability in operation by limiting access to application and other programs stored in the memory of the computer. The control panel of the computer severely limits access by providing thereon only on-off control, run control, and keyed program load control switches. Thus an operator can only turn on and off the computer and actuate the run control. The possession of a key is required to load the computer with an application program.



3,744,035

METHOD OF AND APPARATUS FOR PREPARING A PROGRAM FOR A TEXTILE MACHINE

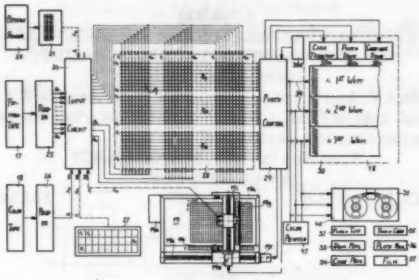
Werner Geirhos, Senden, Germany, and Frans Eggermont, Waregem, Belgium, assignors to Grosse Webereimaschinen GmbH, Ulm/Donau, Germany

Filed May 30, 1972, Ser. No. 257,587

Claims priority, application Germany, June 1, 1971, P 21 27 151.2

Int. Cl. D03d 49/00; G06f 3/08

U.S. Cl. 340—172.5 **24 Claims**

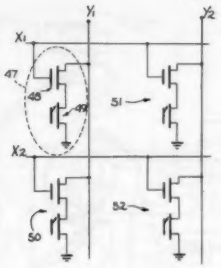


A design carrying lines of color effects each indicating an arrangement of particular warp and weft threads according to particular patterns is scanned and all of the color-effect data are stored in a memory. The various patterns are stored in another memory as a plurality of parallel data trains having a common start and subdivided into a plurality of weft words. The color-effect data for the first pattern line is read out of its memory and combined with the pattern data, with, if necessary, the first weft word being read and reread repeatedly as the first color-effect line is read out. The second weft word is similarly repeated for the second color-effect line and so on until the entire warp repeat is completed. The combined signals are fed via a crossbar arrangement to the inputs of a punching machine or the like which prepares the finished program.

3,744,036
ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY ARRAY

Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Mountain View, Calif.

Filed May 24, 1971, Ser. No. 146,358
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 4 Claims

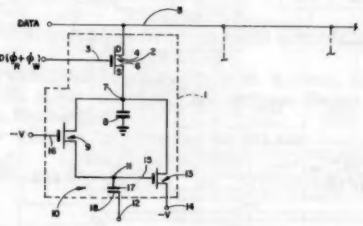


An electrically programmable semiconductor read only memory array which utilizes a floating gate metal-oxide-semiconductor (MOS) device as a storage element is described. The floating gate of the device (storage element) may be negatively charged by avalanche injection. A field effect transistor is coupled in series with the storage element to form a single memory cell. A plurality of cells comprise an array. The gate of the field effect transistor is coupled to an X-line of the memory array and one of the other terminals of this transistor, in one embodiment, is coupled to a Y-line of the array. The array is electrically programmed by application of information to the X and Y lines of the array.

3,744,037
TWO-CLOCK MEMORY CELL

John R. Spence, Villa Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 4, 1971, Ser. No. 186,361
Int. Cl. G11c 11/24, 11/40
U.S. Cl. 340—173 CA 26 Claims



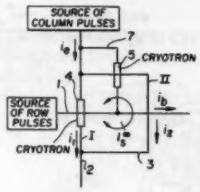
A memory cell has read, write, and address field effect transistors.

The address field effect transistor is controlled by one clock signal including an address interval ANDed with ORed read and write intervals. Data is stored in the cell by a capacitive storage device having an electrode connected to a second clock signal which includes a reset interval and a read interval. The second clock provides a boost signal for enabling a relatively high voltage level to be read-out during the read interval where the stored data is a logic one. A fixed voltage level is connected to write and read field effect transistors in the cell.

3,744,038
SUPERCONDUCTING LEARNING MATRIX

Hans-Joachim Kneupel, Dresden, and Bernd Steffin, Langebruck, both of Germany, assignors to VEB Kombinat Robotron, Radeberg, Germany

Filed July 9, 1971, Ser. No. 161,003
Int. Cl. G11c 11/44, 27/00; H03k 25/00
U.S. Cl. 340—173.1 9 Claims

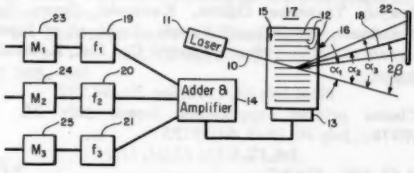


A superconducting learning matrix in which the coupling cells at the matrix intersections include a write cryotron controlled by the row lines for activating the storage cells, and a coupling cryotron for coupling the column lines either to the row lines or word recognition lines for reading out of the cell. The storage cells are activated according to a geometric series. The coupling cryotrons may also be controlled by a blocking line, and additional switching cryotrons may be provided for insuring constant current in taught cells. In a further embodiment, a complementary matrix may also be provided.

3,744,039
SINGLE-LASER SIMULTANEOUS MULTIPLE-CHANNEL CHARACTER GENERATION SYSTEM

George W. Hrbek, Arlington Heights; Adrianus Korpel, Prospect Heights, and William H. Watson, Roselle, all of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 9, 1971, Ser. No. 179,139
Int. Cl. G11c 13/04
U.S. Cl. 340—173 LM 24 Claims

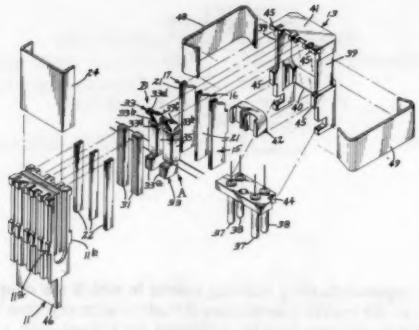


A character imaging system utilizing a single laser source beam, a Bragg cell, and a plurality of oscillators driving the cell to form a like plurality of diffracted beams. Each such beam is gated ON-OFF in intensity in accordance with its corresponding oscillator output which in turn is gated by a respective gate signal. The intensity of each beam is made independent of the variations in the remaining beams by control of the diffraction efficiency of the Bragg cell, or by attenuation of the applied power to the cell varying in accordance with the number of diffracted beams. The system preferably incorporates a computer output as a source of digital information channels supplying signals for the control of respective gate signals to the oscillators.

3,744,040
MAGNETIC HEAD CONSTRUCTION

Arthur Honegger; Willy E. Schrepfer, and Alan C. Kronfeld, all of Minneapolis, Minn., assignors to Nortronics Company, Inc., Minneapolis, Minn.

Filed Feb. 16, 1972, Ser. No. 226,699
Int. Cl. G11b *5/26, 5/28*
U.S. Cl. 340—174.1 F **1 Claim**

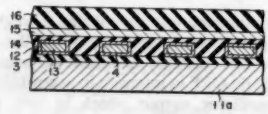


A read-after-write magnetic head with closely spaced, parallel read and write gaps is disclosed. A magnetic circuit comprising a pair of core pieces is provided for each gap. A coil is mounted on the outer core piece of each pair and each outer core piece is held in a core piece holder which extends over substantially all of the outer core piece except for a core piece tip in order to reduce flux leakage between circuits. Both of the inner core pieces for each gap are held in place by a center core piece holder of unitary construction. Two shields are located within the center core piece holder and are shaped to cooperate with the magnetic head housing to complete flux paths surrounding each of the read and write portions of the head.

3,744,041
MAGNETIC THIN FILM MEMORY ELEMENTS AND METHOD OF MANUFACTURING THE SAME

Iwao Higashinakagawa, Kawasaki-shi; Takashi Nakagawa, Tokyo; Takenobu Ogawa, Kawasaki; Syozo Takeno, Yokohama, and Nobuaki Yasuda, Zushi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 28, 1970, Ser. No. 58,797
Claims priority, application Japan, July 30, 1969, 44/59781; July 30, 1969, 44/59793
Int. Cl. G11c *11/04, 11/14*
U.S. Cl. 340—174 BC **7 Claims**

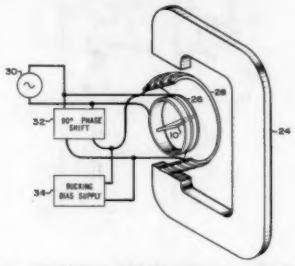


A magnetic thin film memory element including word lines and digit lines spatially intersecting at right angles is prepared by continuously forming the digit line unit on a heat resistant flexible insulator sheet, and perfectly contacting the digit line unit to a separately prepared word line unit.

3,744,042
MEMORY PROTECT FOR MAGNETIC BUBBLE MEMORY

Leonard S. Cutler, Los Altos Hills, and Richard F. Lacey, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 5, 1972, Ser. No. 250,543
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **3 Claims**

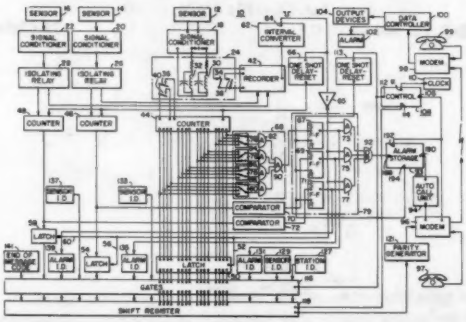


A magnetic bubble memory is placed in a canted, static magnetic field to produce a holding bias for the magnetic bubbles in addition to the bubble generating bias. When a rotating magnetic field is applied to move the bubbles, a static bias is also applied to cancel out the holding bias.

3,744,043
ENVIRONMENTAL DATA SYSTEM

Richard M. Walden; Roger E. Medlin; Robert A. Warren, and Delbert D. Weers, all of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 1, 1971, Ser. No. 14,847
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 R **22 Claims**

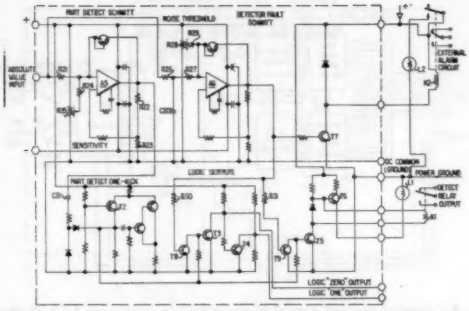


An environmental data system which continuously records the output of one or more field located environmental sensors, and which establishes a communication link with a remote central control station when the output of any of the sensors, over a predetermined period of time, exceeds a predetermined threshold magnitude. When the communication link is established, data relative to the sensors is automatically transmitted to the central control station, along with suitable station and sensor identification. The communication link may also be activated from the central control system, to monitor the latest sensor readings at any field location.

3,744,044
ELECTRONIC SYSTEM TO DETECT OBJECTS IN CONFINED VOLUME

Robert E. Vosteen, 315 West Center St., Medina, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,153
Int. Cl. G08b *13/00, 13/24*
U.S. Cl. 340—213 R 8 Claims

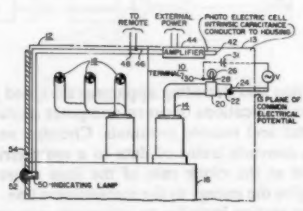


A system to detect changes in the contents of a defined sensitive volume wherein a detector having an active resonant circuit is connected in an oscillator circuit to create an internal field in the defined sensitive volume, the frequency of the oscillator being shifted by a sudden change in the contents of the defined sensitive volume affecting the internal field. A receiver is coupled to the oscillator circuit and responsive to changes in the frequency of the oscillator to produce an output indicative thereof. Feedback means connected between the output of the receiver and the oscillator provide tracking between the oscillator and the receiver in the zero to low frequency range. Detect means are connected to the output of the receiver to produce a detect signal in response to a change in the contents of the defined sensitive volume affecting the internal field. The system also includes indication means connected to the output of the detect means activated in response to detect signals to provide an indication of a change in the contents of the defined sensitive volume affecting the internal field, and error prevention means connected to the detect means and the indication means operative to prevent activation of the indication means in the event erroneous detect signals are produced.

3,744,045
POTENTIAL INDICATOR FOR HIGH VOLTAGE SWITCHGEAR

Russell E. Frink, Pittsburgh, and John M. Kozlovic, Greensburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1970, Ser. No. 101,346
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 R 21 Claims

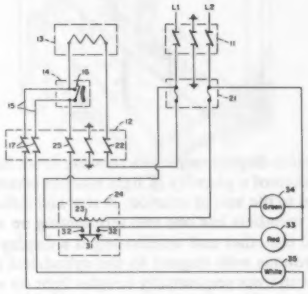


A neon glow tube is mounted proximate to the high voltage conductors or bus bars of metalclad or metal enclosed switchgear. In the presence of high voltage on these conductors, the tube glows. A light sensing device detects the glow from the neon tube and either converts it to an electrical signal which is amplified through a suitable amplifying means and transmitted to a remote indicator or a fiber optics bundle carries the light from the glow tube to the remote indicator. In either case, a warning or indication is provid1d to operating personnel of the existence of high voltage within the metalclad or metal enclosed switchgear.

3,744,046
ENGINE HEATER MONITOR AND CONTROL SYSTEM

Nick J. Tamasi, Des Moines, Iowa, assignor to Douglas Machinery Co., Des Moines, Iowa

Filed July 8, 1971, Ser. No. 160,602
Int. Cl. G08b *19/00*
U.S. Cl. 340—253 R 2 Claims

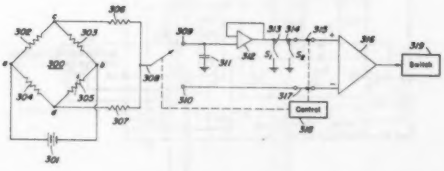


An engine heater system monitor for use on diesel truck tractors and the like connects a serial relay coil in the line to supply heater current and actuates the relay at a current level somewhat less than rated heater current. Three indicator lights are connected to indicate when the system is: (1) energized but not supplying heater current; (2) energized and supplying heater current; (3) energized on stand-by waiting for thermostat demand for heater current; and (4) deenergized.

3,744,047
SUPERPOSED SHEET DETECTION

James H. Allen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 16, 1971, Ser. No. 180,973
Int. Cl. B65h *7/12*
U.S. Cl. 340—259 27 Claims



Superposed sheet detecting methods and the apparatus wherein rotatable member disposed in operable location to sheet transport means is adapted to be angularly displaced in accordance with the thickness of sheets transported. Signals representative of the angular displacement of the rotatable member are produced and at the commencement of a detecting cycle, an initially produced signal is utilized as a reference signal. Subsequently produced signals are compared to the reference signal to determine differences therebetween. If the difference between a produced signal and the reference signal

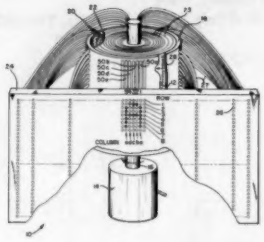
exceeds a predetermined level, the sheet associated with said produced signal is deflected from the sheet transport means and the detecting cycle is terminated.

3,744,048

DISPLAY APPARATUS EMPLOYING FIBER OPTICS

Hans H. Treichel, Philadelphia, Pa., assignor to Ultronic Systems Corp., Moorestown, N.J.

Filed Sept. 1, 1971, Ser. No. 176,858
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **7 Claims**



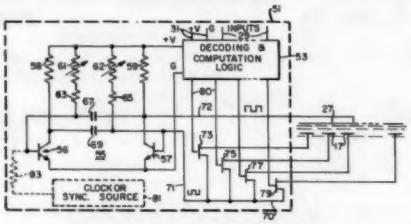
A fiber optic display employs a rotating drum having on the periphery thereof a plurality of light sources arranged along a line parallel to the axis of rotation. A row and column array of fiber optic members has one end terminating on a cylindrical surface and the other end terminating at a display surface. As the drum rotates with respect to the cylindrical surface, the line of light sources sequentially couples light on a column by column basis to the end of the fiber optic array associated with the cylindrical surface. By selectively energizing the light sources in synchronism with the rotation of the drum, alphanumeric characters are formed on the display surface.

3,744,049

LIQUID CRYSTAL DRIVING AND SWITCHING APPARATUS UTILIZING MULTIVIBRATORS AND BIDIRECTIONAL SWITCHES

Nunzio A. Luce, Trenton, N.J., assignor to Optel Corporation, Princeton, N.J.

Filed Nov. 16, 1971, Ser. No. 199,181
Int. Cl. G09f *9/30*
U.S. Cl. 340—336 **15 Claims**



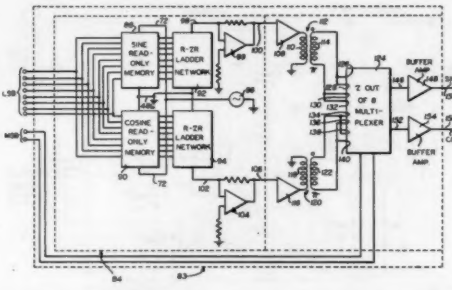
A liquid crystal or other display device employing a drive and control circuit for activating selected segments of the display with a bidirectional current utilizing integrated circuit technology with a low voltage DC primary power supply to produce and control the bidirectional current. Accordingly, said DC power supply is utilized to operate a multivibrator circuit which at first and second outputs thereof provides rectangular waveforms varying alternately between a first and a second DC level to cause bidirectional current flow through the crystal when a return path is implemented through a bidirectional current conducting switch.

3,744,050

APPARATUS FOR PROVIDING AN ANALOG OUTPUT IN RESPONSE TO A DIGITAL INPUT

Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,125
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **21 Claims**



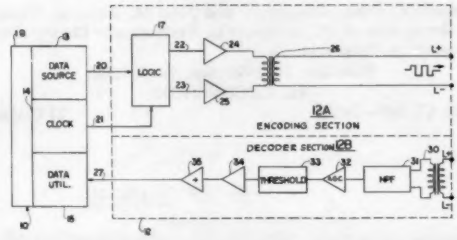
An analog output signal is provided in response to a digital input signal by means which include a read only memory which has been programmed to provide an analog function of an input signal and a binary scaling means, such as an R–2R ladder network connected to the output of the memory. The memory may be programmed to provide a sinusoidal function of the digital input signal whereby a digital-to-resolver conversion occurs and the analog resolver equivalent of the digital input is provided. Alternatively, a filter response, such as a band pass response, may be provided for an analog signal by programming the memory to provide an attenuation function in response to a digital input signal which is associated with the value of the input frequency of the analog signal, the analog signal being fed through the output stage of the memory. Clearly, the memory may be programmed for other applications in which an analog output signal is provided in response to a digital input signal.

3,744,051

COMPUTER INTERFACE CODING AND DECODING APPARATUS

Ray W. Sanders, and Stephen W. Harting, both of Los Angeles, Calif., assignors to Computer Transmission Corporation, Los Angeles, Calif.

Filed Aug. 31, 1971, Ser. No. 176,662
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **6 Claims**



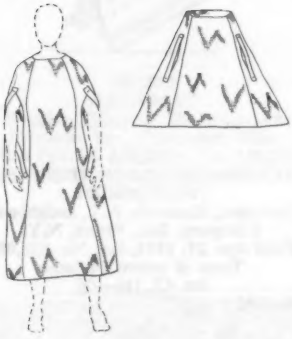
Pulse coding and decoding apparatus designed particularly for data communications between computer centers or a central computer and remote terminals. Circuitry responsive to digital data converts trains of data to a symmetrical doublet pulse format at the clock rate of the data source. A transformer couples the energy to the transmission line.

A receiver section includes an automatic gain control of incoming signals. A threshold circuit eliminates signals below a predetermined level and discards the complementary signal of the doublet to reconstruct the original digital data train.

DESIGNS

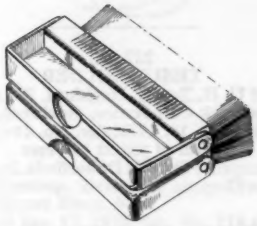
JULY 3, 1973

227,518
PONCHO
Theodore D. A. Collet, 6140 Calle Tuberia, Scottsdale, Ariz. 85251
Filed May 18, 1971, Ser. No. 144,705
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—179

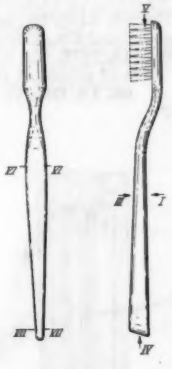


227,519
FOOTWEAR
Damon G. Meadows, Bel Air, Md., assignor to Bata Shoe Company, Inc., Belcamp, Md.
Filed Oct. 15, 1971, Ser. No. 189,800
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

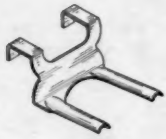
227,520
CLOTHES BRUSH WITH PROTECTIVE CASE
Richard Fischer, Offenbach am Main-Burgel, Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH
Filed Dec. 13, 1971, Ser. No. 207,717
Term of patent 7 years
Int. Cl. D4—*02*
U.S. Cl. D4—17



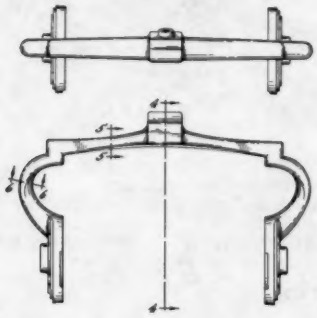
227,521
HEAD AND HANDLE FOR A TOOTHBRUSH
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Aug. 20, 1971, Ser. No. 173,722
Claims priority, application Norway Mar. 3, 1971
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



227,522
HANGER FOR TOOLS AND THE LIKE
Charles M. Burt, 16601 Chatham St., Detroit, Mich. 48219
Filed May 3, 1971, Ser. No. 139,989
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85

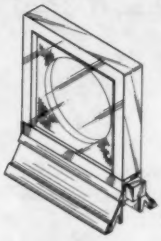


227,523
TISSUE HOLDER
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,893
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

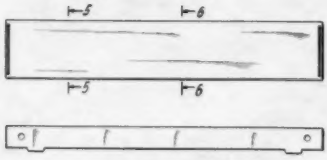


227,524
FOLDING PANEL SYSTEM WITH MOVABLE VERTICAL LOUVERS
Charles D. Dushek, Lisle, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed May 12, 1971, Ser. No. 142,860
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—139

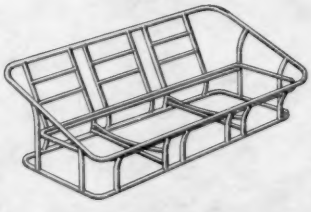
227,525
DISPLAY CASE FOR A COIN OR THE LIKE
James R. Skinner, Cupertino, and Mark O. Ultz, Mountain View, Calif., assignors to M. U. Engineering & Mfg., Inc., Mountain View, Calif.
Filed June 1, 1971, Ser. No. 149,104
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—172



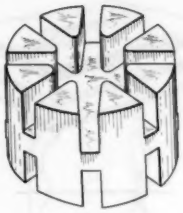
227,526
STRETCHER INSERT FOR THE BASE OF A FILE RACK
William Chovanec, Montvale, N.J., assignor to Art Steel Company, Inc., Bronx, N.Y.
Filed Apr. 27, 1971, Ser. No. 138,007
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



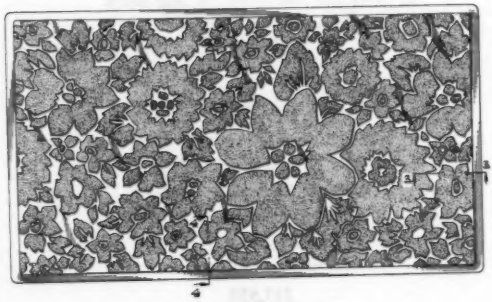
227,527
FRAME FOR A SEAT OR SIMILAR ARTICLE
Tadao E. Inouye, 5724 Fallsgrove St., Los Angeles, Calif. 90016
Filed June 3, 1971, Ser. No. 149,879
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—191



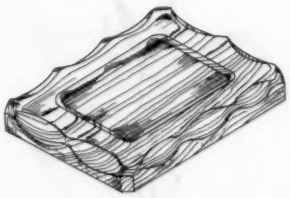
227,528
CONNECTOR FOR MOUNTING DISPLAYS
Michael Wahl, Searington, Long Island, N.Y., assignor to Wahl Associates, Inc., Long Island City, N.Y.
Filed Mar. 28, 1972, Ser. No. 239,000
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



227,529
BATH MAT
Ellie J. Huggins, Wheaton, Ill., assignor to Pretty Products, Inc., Coshocton, Ohio
Filed Feb. 14, 1972, Ser. No. 226,399
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—210



227,530
PICTURE FRAME
Everett L. Steeves and Hendrik C. Steeves, both of 1415 Maple Park Drive, Medford, Oreg. 97501
Filed Aug. 9, 1971, Ser. No. 170,403
Term of patent 3½ years
Int. Cl. D6—*07*
U.S. Cl. D6—244

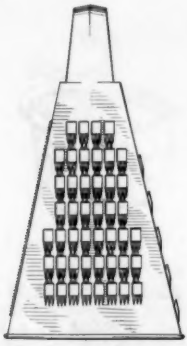


227,531
CUP
Ute Berger, 75 Wandersmannstrasse, Weisbaden-Erbenheim, Germany
Filed Apr. 15, 1971, Ser. No. 134,530
Claims priority, application Germany Oct. 15, 1970
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5

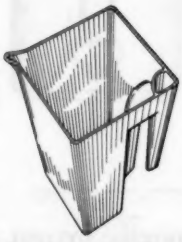
227,532
CUP
Niels Refsgaard, also known as Niels Refsgaard Andersen, Ishoj Per Taastrup, Denmark, assignor to Dansk Designs Ltd., Mount Kisco, N.Y.
Filed Jan. 17, 1972, Ser. No. 218,632
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

227,533
RING COOKING UTENSIL FOR HAMBURGER PATTIES
Charles L. Christell, 10 Kathryn St., Bellevue, N.J. 07109
Filed June 8, 1971, Ser. No. 151,162
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—43

227,534
GRATER
Lothar Hutzler, Long Beach, N.Y., assignor to Hutzler Manufacturing Company, Long Island City, N.Y.
Filed Jan. 31, 1972, Ser. No. 222,451
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



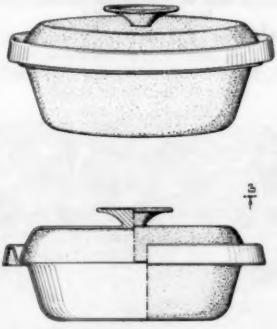
227,535
PITCHER
Gary S. Grimes, Twin Lakes, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed Dec. 27, 1971, Ser. No. 212,867
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64



227,536
NAPKIN RING
Ute Berger, 75 Wandersmannstrasse, Wiesbaden-Erbenheim, Germany
Filed Apr. 15, 1971, Ser. No. 134,528
Claims priority, application Germany Oct. 15, 1970
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—72

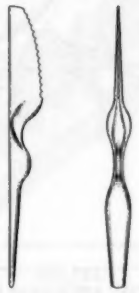
227,537
INSULATED COMBINED FOOD HOLDER AND SERVER
Henry G. Farris, 11417 N. May Ave., Oklahoma City, Okla. 73120
Filed Apr. 1, 1971, Ser. No. 130,567
Term of patent 14 years
Int. Cl. D7
U.S. Cl. D7—77

227,538
CASSEROLE
Fred Press, White Plains, N.Y., assignor to House Mates Inc., Hartsdale, N.Y.
Filed June 23, 1971, Ser. No. 156,174
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

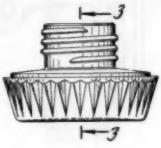


227,539
ARTICLE OF FLATWARE
Diana Erica Ford, London, England, assignor to The Metal Box Company Limited
Filed Nov. 12, 1971, Ser. No. 198,488
Claims priority, application Great Britain Sept. 14, 1971
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138

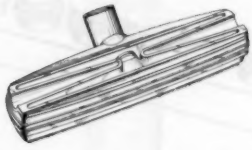
227,540
PLASTIC KNIFE
Diana Erica Ford, London, England, assignor to The British Box Company Limited
Filed Nov. 12, 1971, Ser. No. 198,489
Claims priority, application Great Britain Sept. 14, 1971
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138



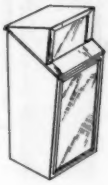
227,541
BLENDER TOP OR SIMILAR ARTICLE
Mitchell A. Himmel, 1 Park Lane, Mount Vernon, N.Y. 10552
Filed Jan. 25, 1971, Ser. No. 109,724
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—154



227,542
VACUUM CLEANER NOZZLE
Johan Arne Dömstedt, Hagersten, and Christian Staffansson Klingspor, Stockholm, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed June 1, 1971, Ser. No. 149,090
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—174

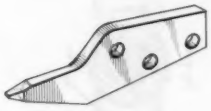


227,543
WASTE BIN
Denis Austin Lamb, Elsinore Garage, Upper Park Road, Bromley, England, and Julian Kerry Phillimore, 13 Benhurst Court, Streatham Common, London, England
Filed July 21, 1971, Ser. No. 164,967
Claims priority, application Great Britain Jan. 22, 1970
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

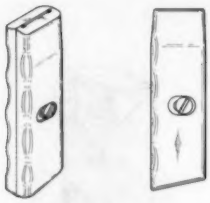


227,544
CENTER SHEAR BLADE
Kunio A. Sumida, Los Angeles, Calif., assignor to Leonard U. Shapiro, St. Paul, Minn.
Filed July 21, 1971, Ser. No. 164,978
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—98

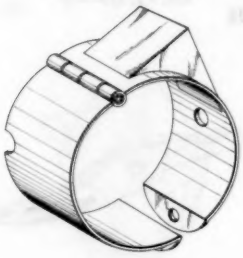
227,545
SIDE SHEAR BLADE
Kunio A. Sumida, Los Angeles, Calif., assignor to Leonard U. Shapiro, St. Paul, Minn.
Filed July 21, 1971, Ser. No. 164,979
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—98



227,546
CUTTING BLADE HANDLE
Hyman L. Berlin, 354 Cedar Lane, East Meadow, N.Y. 11554
Filed Mar. 29, 1972, Ser. No. 239,401
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—107



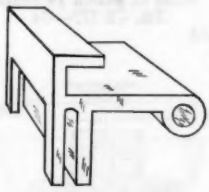
227,547
LOCKABLE HINGED COLLAR TO COVER STEERING COLUMN IGNITION LOCK
Howard Bodan, 33—51 73rd St., Queens, N.Y. 11372
Filed Mar. 18, 1971, Ser. No. 125,905
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113



227,548
CIRCULAR HARDWARE
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,906
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—144

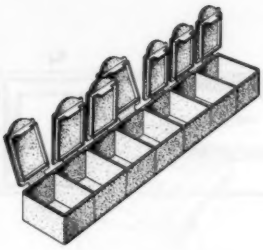
227,549
DUAL SUPPORT BRACKET FOR TRASH CANS
Tacko D. Alissandratos, P.O. Box 606, Tarpon Springs, Fla. 33589
Filed Apr. 10, 1970, Ser. No. 22,374
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234

227,550
HOLDER OR THE LIKE FOR DRAINERS ON PAILS AND OTHER ARTICLES
Thomas P. O'Donnell, 220 Highland Blvd., Brooklyn, N.Y. 11207
Filed Sept. 1, 1971, Ser. No. 177,209
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



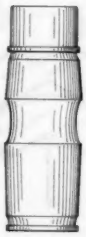
227,551
PLURAL COMPARTMENT CONTAINER FOR PAINTS OR THE LIKE
Ernest Bryant Crutchfield, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Sept. 15, 1971, Ser. No. 180,934
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18

227,552
CONTAINER FOR PILLS OR THE LIKE
Roy G. Bridges, 641 S. 4th Ave., Los Angeles, Calif. 91746
Filed Feb. 22, 1971, Ser. No. 117,859
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



227,553
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,467
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

227,554
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,468
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

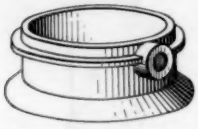


227,555
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,469
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

227,556
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,470
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

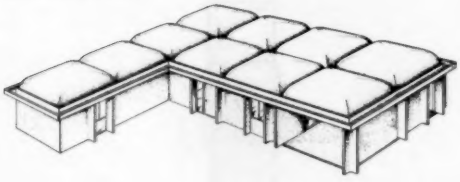
227,557
CAN OR SIMILAR ARTICLE
Richard B. Bagguley, Orland Park, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Apr. 12, 1972, Ser. No. 243,545
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

227,558
DISPENSING FITTING FOR A REFRIGERANT CAN
John Lannes Matthews, Jr., Neodesha, Kans., assignor to Airosol Company, Inc., Neodesha, Kans.
Filed Dec. 3, 1971, Ser. No. 204,784
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253

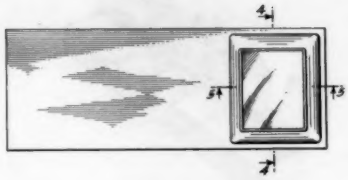


227,559
MULTIPLE UNIT TOWNHOUSE
Peter H. Edwards, Upper Arlington, and Harvey R. Geiger and William Byron Ireland, Columbus, Ohio, assignors to Multicon Properties, Inc., Columbus, Ohio
Filed July 2, 1971, Ser. No. 159,156
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A

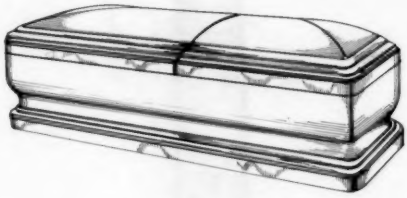
227,560
BUILDING
Paul J. Marks, Towson, Gilbert D. Cooke, Columbia, and Willard J. Schroll and James E. Van Noy, Jessup, Md., assignors to Better Marketing Industries, Inc.
Filed Nov. 5, 1971, Ser. No. 196,264
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



227,561
REARVIEW MIRROR
Kenneth J. Fischer, 3248 Fruitwood Lane, Jacksonville, Fla. 32211
Filed May 4, 1971, Ser. No. 140,314
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—6 M

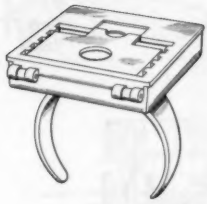


227,562
CASKET
William V. Pitt, P.O. Box 7622, Waco, Tex. 76710
Filed Nov. 1, 1971, Ser. No. 194,797
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D19—1

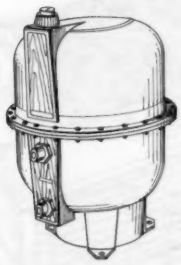


227,563
SNAIL BAIT HOLDER
John Torchia, 2140 Telegraph Ave., Stockton, Calif. 95204
Filed Mar. 16, 1972, Ser. No. 235,458
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

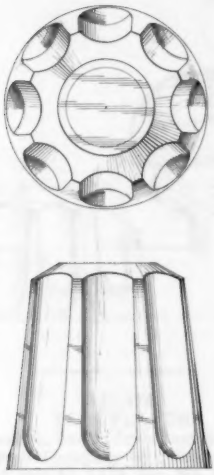
227,564
FISH BAIT HOLDER
Charles P. Ritter, 704 E. Prairie Ronde, Dowagiac, Mich. 49047
Filed Aug. 13, 1970, Ser. No. 24,475
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



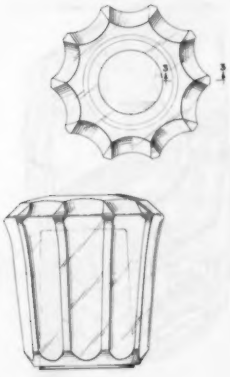
227,565
FILTER
Gordon F. Ehret, Alhambra, Calif., assignor to Swimquip, Inc., El Monte, Calif.
Filed May 10, 1971, Ser. No. 142,090
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



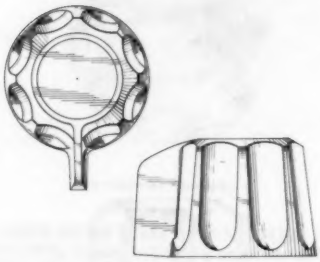
227,566
FAUCET HANDLE
Ralph E. Thorp, Lafayette, Ind., assignor to Globe Valve Corporation
Filed Feb. 3, 1972, Ser. No. 223,393
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28



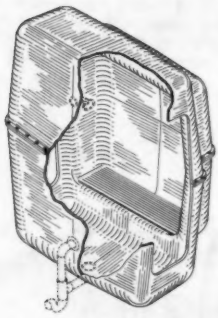
227,567
FAUCET HANDLE
Ralph E. Thorp, Lafayette, Ind., assignor to Globe Valve Corporation
Filed Feb. 3, 1972, Ser. No. 223,394
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28



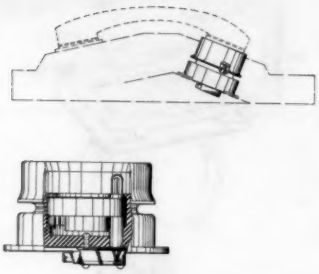
227,568
FAUCET HANDLE
Ralph E. Thorp, Lafayette, Ind., assignor to Globe Valve Corporation
Filed Feb. 4, 1972, Ser. No. 223,809
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



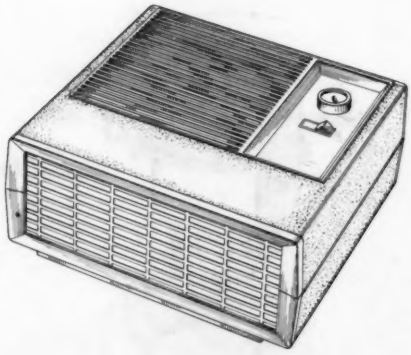
227,569
COMBINED SHOWER-SAUNA-BATHTUB UNIT
Emmett J. Callahan, 2065 Liberty St. NE., Salem, Oreg. 97302
Filed Sept. 17, 1971, Ser. No. 181,652
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



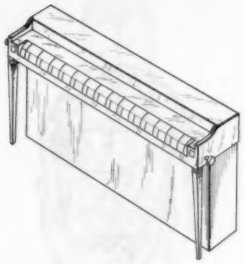
227,570
COMBINED SWITCH AND ACOUSTICAL COUPLER
John P. Kennedy, Columbus, Ohio, assignor to Design Elements, Inc.
Filed Jan. 3, 1972, Ser. No. 215,287
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



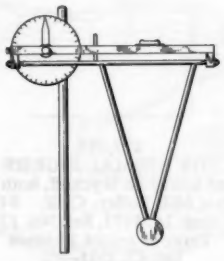
227,571
PORTABLE ELECTRIC HEATER
William J. Cook, Trumbull, Conn., assignor to General Electric Company
Filed Nov. 18, 1971, Ser. No. 200,271
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



227,572
ORNAMENTAL MUSIC TEACHING DEVICE
Robert G. Wyatt, P.O. Box 27, Moose Jaw, Saskatchewan, Canada
Filed May 6, 1971, Ser. No. 141,101
Claims priority, application Canada Nov. 6, 1970
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

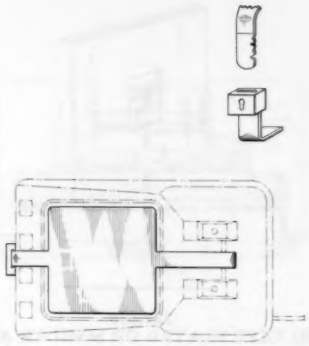


227,573
PENDULUM DEMONSTRATION DEVICE
Roger D. Stephenson, Overland Park, Kans., assignor to Physics Apparatus Research, Inc., Overland Park, Kans.
Filed July 19, 1971, Ser. No. 164,202
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

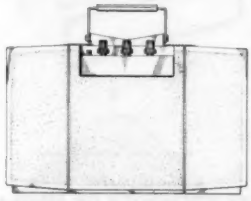


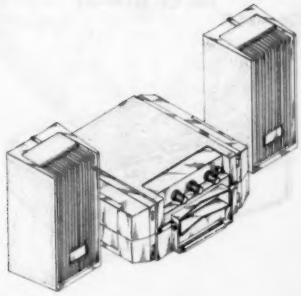
227,574
ORNAMENTAL MUSIC TEACHING DEVICE
Robert G. Wyatt, P.O. Box 27, Moose Jaw, Saskatchewan, Canada
Filed May 6, 1971, Ser. No. 141,102
Claims priority, application Canada Nov. 7, 1970
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

227,575
TELEPHONE SECURITY DEVICE
Richard C. Heymann IV, Morristown, N.J. (68 Haas Road, Millington, N.J. 07946)
Filed Mar. 23, 1971, Ser. No. 127,431
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

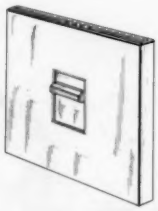


227,576
TAPE PLAYER
Teruo Matsushita, Iwaki, Japan, assignor to The Alps Motorola Company Inc., Tokyo, Japan
Filed July 23, 1971, Ser. No. 165,863
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B

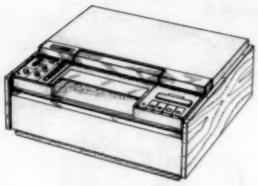




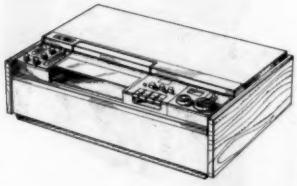
227,577
WALL SWITCH
Noel Mayo, Philadelphia, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed July 27, 1971, Ser. No. 166,651
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 B



227,578
VIDEO TAPE PLAYER OR SIMILAR ARTICLE
Takao Takanashi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 2, 1971, Ser. No. 177,532
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



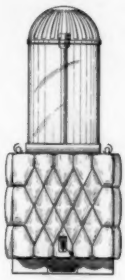
227,579
VIDEO TAPE RECORDER OR SIMILAR ARTICLE
Takao Takanashi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 2, 1971, Ser. No. 177,540
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



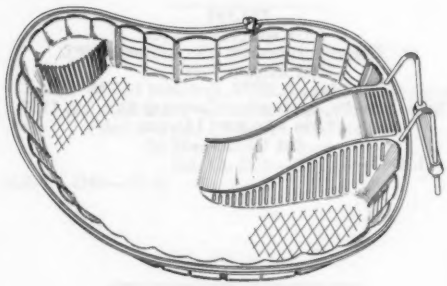
227,580
TROPHY
Silvio Gazzaniga, Milan, Italy, assignor to Federation Internationale de Football Association, Zurich, Switzerland
Filed Oct. 4, 1971, Ser. No. 186,597
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28 A

227,581
TOY ANIMAL FIGURE
Esther Cherk and Garry D. Wyckoff, both of 522 Cascade Drive, Mill Valley, Calif. 94941
Filed Aug. 16, 1971, Ser. No. 172,377
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 C

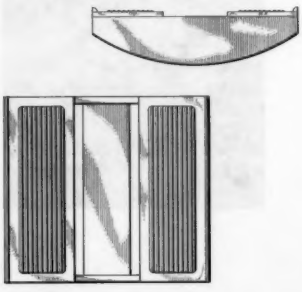
227,582
CHANCE SELECTOR
Gary C. Thompson, 6400 South 2300 East, Salt Lake City, Utah 84121
Filed Aug. 24, 1971, Ser. No. 174,587
Term of patent 3½ years
Int. Cl. D21—*03*
U.S. Cl. D34—5 GG



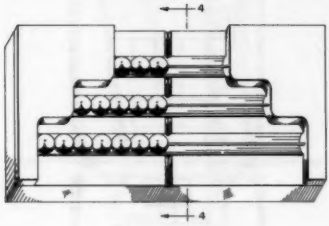
227,583
POOL WITH INTEGRAL SLIDE
Harry T. Bowkley, Manchester, and Joseph Diemond, Simsbury, Conn., assignors to Coleco Industries, Inc.
Filed Apr. 12, 1971, Ser. No. 133,462
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 F



227,584
ROCKER FOR PHYSICAL EXERCISE
Gregorio A. Perez, 1925 SW. 3rd St., Miami, Fla. 33135
Filed May 7, 1971, Ser. No. 141,464
Term of patent 14 years
Int. Cl. D21—*09*
U.S. Cl. D34—5 K

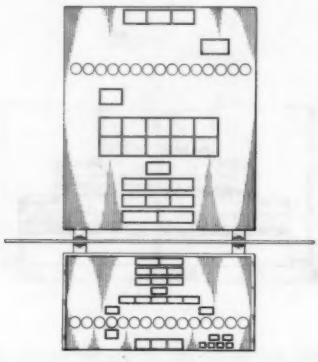


227,585
SLIDING BEADS GAME BOARD
Dale K. Welbourn, P.O. Box 26, Neola, Iowa 51559
Filed July 7, 1971, Ser. No. 160,580
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

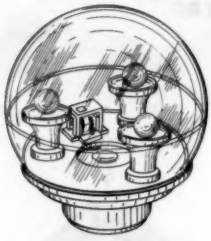


227,586
BASEBALL GAME BOARD
Taketora Maeda, Tokyo, Japan, assignor to Epoch Company, Inc., Tokyo, Japan
Filed Sept. 21, 1971, Ser. No. 182,572
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BG

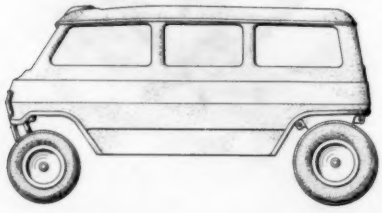
227,587
FOOTBALL GAME BOARD
Robert J. Yane, 1503 Brantford Drive, and Joseph J. Frank, 1397 Leyton Drive, both of Youngstown, Ohio 44509
Filed Mar. 14, 1972, Ser. No. 234,694
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG



227,588
SPRING ACTUATED TOY
Albert Stubbmann, Franklin Lakes, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Aug. 11, 1971, Ser. No. 171,046
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



227,589
VAN RIDING TOY
Cecil Frederick Adicks, Playa Del Rey, Calif., assignor to Kusan, Inc., Nashville, Tenn.
Filed Mar. 13, 1972, Ser. No. 234,464
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

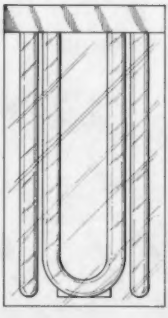


227,590
MATCH BOX HOLDER FOR FIREPLACE TYPE MATCHES
Martin Field, 1346 N. McCadden Place, and John Bereznak, 147 N. Ave. 18, both of Los Angeles, Calif. 90028
Filed Dec. 30, 1971, Ser. No. 214,516
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D48—28

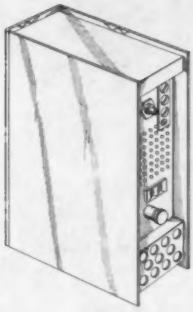
227,591
CURTAIN FABRIC
Heinrich Oelmann, 25 im Bungert, 7891 Dogern, Germany
Filed June 8, 1970, Ser. No. 23,386
Claims priority, application Germany Dec. 11, 1969
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D47—6

227,592
FLOOR LAMP
Motoko Ishii, Tokyo, Japan, assignor to Yamagiwa Electric Company Ltd., Tokyo, Japan
Filed Apr. 13, 1971, Ser. No. 133,771
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A

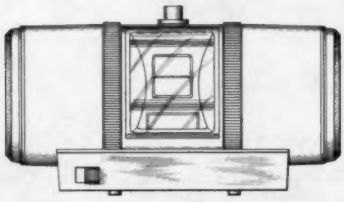
227,593
CEILING MOUNTED FLUORESCENT LIGHT FIXTURE
Ernest Monte, Pasadena, Calif., assignor to Sunbeam Lighting Co., Los Angeles, Calif.
Filed July 21, 1971, Ser. No. 164,982
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A



227,594
MOTION DETECTOR
Gerald J. Beck, Shoreview, and William C. Bowles, Edina, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 2, 1971, Ser. No. 177,529
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 R



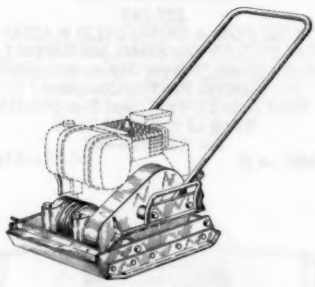
227,595
HOUSING FOR A COMBINED RADIO AND CALENDAR OR SIMILAR ARTICLE
Akira Katoh, Tokyo, Japan, assignor to General Electric Company
Filed June 21, 1971, Ser. No. 155,411
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



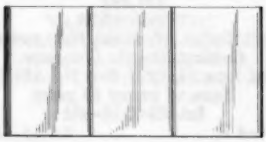
227,596
TONE ARM
David C. Bailey, Westfield, N.J., assignor to General Electric Company
Filed June 24, 1971, Ser. No. 156,593
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R

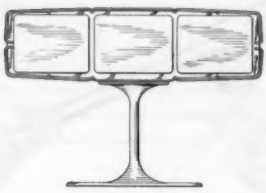
227,597
SPECTACLE FRAME FRONT
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 16, 1971, Ser. No. 153,907
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

227,598
COMPACTOR HOUSING
Helmut A. Maass, Hartford, Wis., assignor to M-B-W, Inc., Slinger, Wis.
Filed Aug. 11, 1971, Ser. No. 171,024
Term of patent 14 years
Int. Cl. D15—*04, 99*
U.S. Cl. D60—1

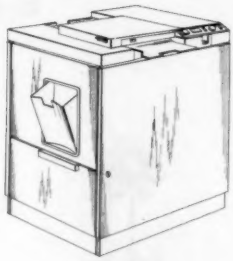


227,599
AUDIO VISUAL DISPLAY CABINET
Edwin R. Wisgin, Mayfield Heights, Ohio, assignor to Rappaport Exhibits, Inc., Cleveland, Ohio
Filed Oct. 13, 1971, Ser. No. 189,060
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N

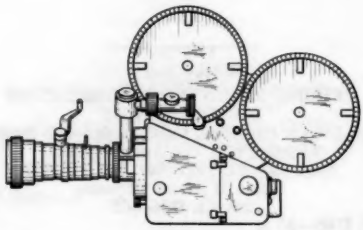




227,600
COPYING MACHINE OR THE LIKE
Eliot F. Noyes, New Canaan, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1971, Ser. No. 210,296
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



227,601
MOTION PICTURE CAMERA
James Frezzolini and James J. Crawford, Ringwood, N.J., assignors to Frezzolini Electronics Inc., Hawthorne, N.J.
Filed May 23, 1972, Ser. No. 256,211
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 C



227,602
FONT OF ELECTROLUMINESCENT CHARACTERS
Brian Astel, Hightstown, N.J., assignor to Optel Corporation, Princeton, N.J.
Filed Feb. 17, 1972, Ser. No. 227,332
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12 B

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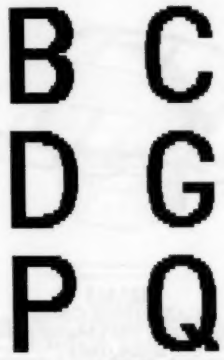
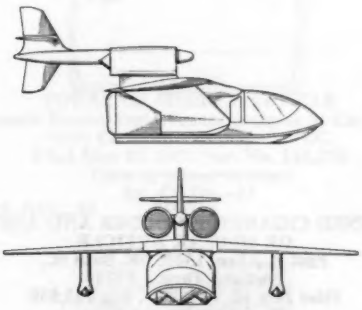
5679

227,603
FONT OF CHARACTERS
Stanley N. Baron, Stamford, Conn., assignor to Columbia Broadcasting System, Inc.
Filed Mar. 20, 1972, Ser. No. 236,544
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



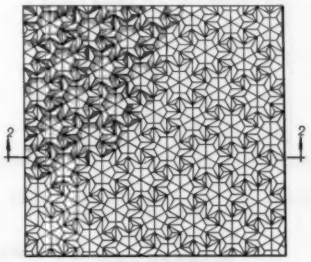
227,604
AMPHIBIAN AIRCRAFT
Richard A. Vrooman, 3551 Mentone Ave. 4, Los Angeles, Calif. 90034
Filed Jan. 27, 1971, Ser. No. 110,358
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1



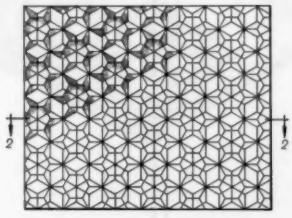
227,605
BOAT
Ivan A. Gibson, 1339 W. Washington St., Orlando, Fla. 32805
Filed Feb. 1, 1971, Ser. No. 111,783
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q

227,606
AEROSPACE CRAFT
Lawrence Bernard Rellis, 10460 SW. 163rd St., Miami, Fla. 33157
Filed June 22, 1971, Ser. No. 155,686
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 L

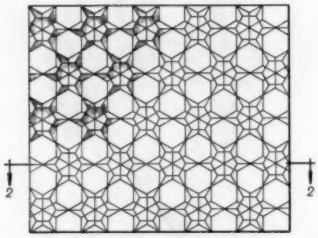
227,607
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60067
Filed July 14, 1971, Ser. No. 162,751
Term of patent 14 years
Int. Cl. D29—*02*; D26—*05*
U.S. Cl. D72—1 E



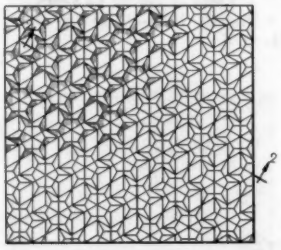
227,608
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60067
Filed Sept. 15, 1971, Ser. No. 162,752
Term of patent 14 years
Int. Cl. D29—*02*; D26—*05*
U.S. Cl. D72—1 E



227,609
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60067
Filed Sept. 15, 1971, Ser. No. 162,753
Term of patent 14 years
Int. Cl. D29—*02;* D26—*05*
U.S. Cl. D72—1 E

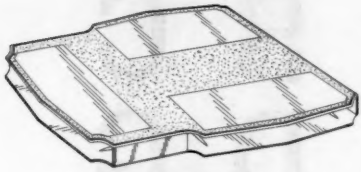


227,610
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60067
Filed Sept. 15, 1971, Ser. No. 162,754
Term of patent 14 years
Int. Cl. D29—*02;* D26—*05*
U.S. Cl. D72—1 E

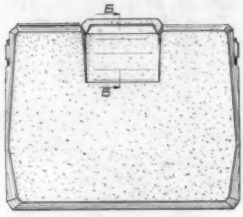


227,611
MARKER PEN
Alain Carre, Paris, France, assignor to Societe le Foyer, Paris, France
Filed June 21, 1971, Ser. No. 155,404
Claims priority, application France Dec. 21, 1970
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

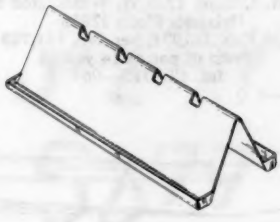
227,612
CASSETTE HOLDER
Terry D. Mason, 10270 Sentry Drive, Stanton, Calif. 90680
Filed Apr. 5, 1971, Ser. No. 131,568
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



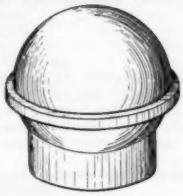
227,613
CARRYING CASE
Sergio Montanari, Via Leopoldo Nobili 11, Rome, Italy
Filed July 27, 1971, Ser. No. 166,657
Claims priority, application Italy Jan. 29, 1971
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R



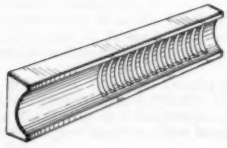
227,614
COMBINED CIGARETTE HOLDER AND ASHTRAY OR SIMILAR ARTICLE
Paul E. Allen, 13405 SE. Bush St., Portland, Oreg. 97236
Filed July 16, 1971, Ser. No. 163,560
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H



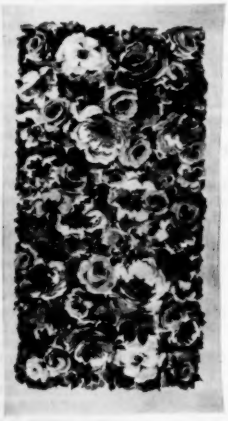
227,615
HAND-HELD HAIR-DRYER
René Chambon, Tarbes, France, assignor to Societe Francaise d'Equipement Menager (S.F.E.M.)
Filed Dec. 21, 1971, Ser. No. 210,628
Claims priority, application France July 12, 1971
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



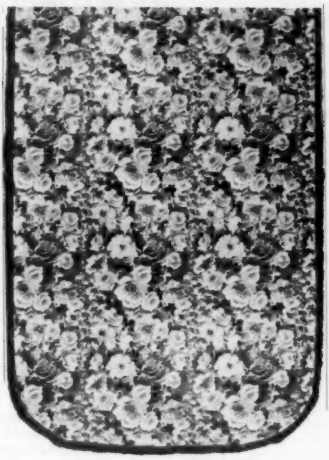
227,616
NOZZLE FOR HAIR DRYER
Stephen K. Lauderback, Elmhurst, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,863
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



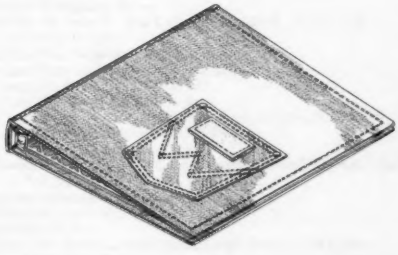
227,617
TOWEL OR SIMILAR ARTICLE
Emeric Kanitz, Paris, France, assignor to Cannon Mills Company, Kannapolis, N.C.
Filed May 13, 1971, Ser. No. 143,278
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D92—26



227,618
BEDSPREAD OR SIMILAR ARTICLE OF BED LINEN
Emeric Kanitz, Paris, France, assignor to Cannon Mills Company, Kannapolis, N.C.
Filed May 13, 1971, Ser. No. 143,291
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D92—2



227,619
PHOTO ALBUM
Benjamin B. Osher, Laurence, N.Y., assignor to Kleer-Vu Industries, Inc.
Filed Mar. 24, 1972, Ser. No. 238,018
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—3 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3D DAY OF JULY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbatiello, Frank J.: *See—*
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Abel, Donald J., to Sensonics, Inc. Rotary electromagnetic actuator of cylindrical form. 3,743,988, Cl. 335-272.000.
Abendschein, Frederic H.; Harlin, Lester E.; and Mount, Alfred G., to Borg-Warner Corporation. Compact rotary sliding vane compressor for an automotive air-conditioning system. 3,743,453, Cl. 418-88.000.
Abler, Julius. Method and apparatus for forming thermoplastic bags. 3,743,567, Cl. 156-553.000.
Abraham, James G.: *See—*
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Adams, Benjamin B., III: *See—*
Stoneham, Jeffrey R.; and Adams, Benjamin B., III, 3,742,832.
Adams, William M., to Iowa State University Research Foundation, Inc. Method of inducing labor and parturition in animals. 3,743,730, Cl. 424-243.000.
Addressograph-Multigraph Corporation: *See—*
Baltazzi, Evan S.; and Printy, Helen C., 3,743,509.
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Adler, Franklin P., to Pullman Transport Leasing Company. Hopper discharge gate actuating mechanism. 3,742,865, Cl. 105-282.00r.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Chabrerie, Jean-Pierre; and Mailfert, Alain Jacques, 3,743,874.
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Agnello, Joseph G. Apparatus for simultaneously recording speech spectra and physiological data. 3,743,783, Cl. 179-1.0vs.
Agranier, Jean-Claude; and Cayol, Andre, to Commissariat a l'Energie Atomique. Device for attaching nuclear fuel pins in an assembly. 3,743,578, Cl. 176-78.000.
Air Preheater Company, Inc., The: *See—*
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Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Nodera, Katsuji; Tanaka, Katsutoshi; and Ooishi, Tadashi, 3,743,654.
Akimoto, Yasusada. Numeral imprinting device. 3,743,072, Cl. 197-6.400.
Aklin, George H.; and Seidenberg, Richard L., to Bausch & Lomb Incorporated. Achromatic condenser for microscope. 3,743,386, Cl. 350-214.000.
Akron Spool and Manufacturing Co.: *See—*
Hawley, John B., 3,743,210.
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Albert, Kenneth; and Kemp, Walters, to C.A.V. Limited. Delivery valves. 3,742,926, Cl. 123-139.0dp.
Albertson, Robert V., to Zeal Corporation. Safety throttle for internal combustion engines. 3,742,928, Cl. 123-198.0dc.
Aldrich, Walter S., to Brady, W. H., Co. Adhesive tape dispenser package. 3,743,086, Cl. 206-52.00r.
Alessio, Aldo M., to California Pellet Mill Company. Praversing roll type extruder. 3,743,462, Cl. 425-192.000.
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Alleman, Mark M.; and Marx, Rodger L., to Caterpillar Tractor Company. Anti-polluting waste collector for a burn table. 3,743,260, Cl. 266-23.00k.
Allen, James H., to Xerox Corporation. Superposed sheet detection. 3,744,047, Cl. 340-259.000.
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Alsbury, Marjory E.; and Alsbury, Merwyn G., 3,742,531.
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American Optical Corporation: *See—*
Haspem, James F., 3,742,947.
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Amoco Production Company: *See—*
Fast, Clarence R.; Wilder, Lawrence B.; and Veatch, Ralph W., Jr., 3,743,017.
Nolte, Kenneth G., 3,742,715.

Amos, Robert James. Coupling device. 3,742,656, Cl. 51-376.000.
AMP Incorporated: *See—*
Brehm, Ronald Carl, 3,742,571.
Broske, William Franklin, 3,742,582.
Demler, Henry William, Sr., 3,743,245.
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Andersson, Lennart, to Strabruken AB. Refractory mass. 3,743,524, Cl. 106-58.000.
Ando, Kunio; Oishi, Hideo; Sagawa, Takao; and Hirano, Seiji, to Chugai Seiyaku Kabushiki Kaisha. Antibiotic complex S-3466 and process for making same. 3,743,724, Cl. 424-122.000.
Andrae, Gunter; and Uden, Edward, to U.S. Philips Corporation. Method of manufacturing semiconductor high-voltage rectifiers. 3,742,589, Cl. 29-577.000.
Andrews, Edward George David; Ward, Robert George; Holliday, John Bertram; and Hurst, James, to Rolls-Royce Limited. Gas turbine engines. 3,742,707, Cl. 60-59.00t.
Andrews, Weldon R., to Sealth Aero Marine. Frictionless cabinet latch. 3,743,336, Cl. 292-173.000.
Andrysiak, Carl D., to Corning Glass Works. Header system for forming multi-bore tubing. 3,743,494, Cl. 65-126.000.
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Arai, Haruhiko; Narashino, Chiba; Horin, Shoji; Ichikawa, Chiba; and Maruta, Iwao; deceased (by Maruta, Kiyoko; and Maruta, Yoshi; heirs), to Kao Soap Co., Ltd. Adhesive composition having low adhesive strength when wet and high adhesive strength when dry.3,743,618, Cl. 260-27.00r.
Archer, James M. Bolt action assembly. 3,742,638, Cl. 42-25.000.
Archer, James M. Vehicle longitudinal torsion member. 3,743,314, Cl. 280-124.00b.
Arciprete, Genio R.; Brokow, Adrian P.; Dumais, Richard L.; and Stucchi, Richard F., to Dennison Manufacturing Company, mesne. Print wheel control system. 3,742,844, Cl. 101-93.00c.
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Asano, Hiroaki; and Otsu, Ikuo, to Toyoda Koki Kabushiki Kaisha. Apparatus for preventing deflection of workpiece. 3,743,490, Cl. 51-238.00s.
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Avenick, Joseph F. Elongate housing having outstanding protrusions for tiltable conductive fluid type ignition safety switch. 3,743,802, Cl. 200-61.470.
Avery, Theodore P.; and Hubbard, Ralph P., to North American Rockwell Corporation. Method and apparatus for recording and verifying magnetic tape programs for machine tools. 3,744,031, Cl. 340-172.500.
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Badovinac, Peter. Fishing slingshot. 3,742,637, Cl. 43-19.000.
Baessler, Lee R.; Gerard, James G.; Glassner, Harvey F.; and Waters, T. James, to Numetrics Corporation. Palpation methods. 3,742,935, Cl. 128-2.00r.
Bagdasarian, Alex, to Artisan Industries, Inc. Film processing rack having overdriven, individually deflecting spools. 3,743,195, Cl. 242-55.010.
Bahnsen, Gerhard I. W. Collapsible camera assembly. 3,742,835, Cl. 95-86.000.
Bahr, Albert. Filter press, more particularly for dewatering sludge in sewage treatment plants. 3,743,100, Cl. 210-386.000.
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Bakoledis, Andrew G., to USM Corporation. Sound muffler for explosive devices. 3,743,048, Cl. 181-53.000.
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Ballentine, Jean. Hair strainer: drain strainer. 3,742,524, Cl. 4-286.000.
Ballou, Clayton R., 1/5 to Hursh, Jack E. Shoring frame system. 3,742,662, Cl. 52-122.000.
Baltazzi, Evan S.; and Printy, Helen C., to Addressograph-Multigraph Corporation. 0-Aminomethyl-p-phenylenediamines and diazonium salts thereof. 3,743,509, Cl. 96-91.00r.
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Baranow, Sanford; and Klingler, Leo J., to Cabot Corporation, mesne. Dispersion hardened metals having improved oxidation characteristics at elevated temperature. 3,743,548, Cl. 148-32.000.
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Bardeau, William Milton. Devices for heating or cooking foods. 3,742,931, Cl. 126-369.000.
Barettella, Bernard. Quill winder cleaning unit. 3,743,194, Cl. 242-27.000.
Barkov, Nikolai Konstantinovich; Kucherova, Natalya Fedorovna; Kochetkov, Nikolai Konstantinovich; Zhukova, Izida Grigorievna; and Sharkova, Nina Mikhailovna. 3,6-Dimethyl-1,2,3,4,4a,9a-hexahydro γ-carboline dihydrochloride for treating mental diseases. 3,743,740, Cl. 424-267.000.
Barnard, Daniel D., to Bendix Corporation, The. Sensing arrangement for a fluidic liquid level sensor and control means. 3,742,967, Cl. 137-819.000.
Barnes, Herbert W.: *See—*
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Barney, John J.; and Flanagan, James L., to Leesona Corporation. Apparatus for extruding plastic material. 3,743,143, Cl. 222-145.000.
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Beasley, Donald L., to Townsend Engineering Company. Fatting attachment for skinning machines. 3,742,841, Cl. 146-130.000.
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Beck, Manfred; Schuchter, Johann; and Marwede, Gunter, to Bayer Aktiengesellschaft. Processing of catalyst-containing polyisoprene solutions. 3,743,631, Cl. 260-94.70n.
Becke, Friedrich B., to Badische Maschinenfabrik. Automatic molding plant operation method. 3,743,004, Cl. 164-18.000.
Bednarczuk, Daniel; and Milton, Arnold T. Protectors and knee guards. 3,742,517, Cl. 2-22.000.
Bedwell, Thomas Albert, to Hesston Corporation. Control for ground tools of farm implements. 3,743,023, Cl. 171-5.000.
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Bell, Antony Geoffrey, to Texas Instruments, Incorporated. Capacitively coupled load control. 3,743,862, Cl. 307-251.000.
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Benjamin , Milton L.; and Miles, Wilbur N., to Erickson Tool Company. Spring actuated chuck. 3,743,307, Cl. 279-91.000.
Bennett, Charles Gale. Rollable article dispenser. 3,743,137, Cl. 221-289.000.
Bennett, John D., to Sun Oil Company (Delaware). Drill bit. 3,743,038, Cl. 175-341.000.
Bennett, Joseph C.; Reimer, William A.; and Winters, Hilary M., to GTE Automatic Electric Laboratories Incorporated. Wire braid forming apparatus. 3,742,574, Cl. 29-203.0mm.
Bennett, William C., to Novar Corporation. Apparatus for operating on tape in tape cartridges. 3,743,301, Cl. 274-4.00b.
Bense, William M., to Lessona Corporation. Apparatus and method for false twisting yarn. 3,742,692, Cl. 57-34.6ns.
Bentley, Roy G. Air treatment apparatus. 3,743,181, Cl. 236-44.00r.
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Berger, Hans-Jurgen; Usedom, Hans-Wilhelm; and Michaelis, Horst, to Vereinigte Flugtechnische Werke-Fokker GmbH. Feedback control system with digital control elements. 3,743,823, Cl. 235-150.100.

Berger, Isaac, to Carrier Corporation. Air conditioning unit. 3,742,725, Cl. 62-419.000.

Bergey, John M., to HMW Industries, Inc. Solid state watch display switch. 3,742,699, Cl. 58-50.00r.

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Bernard, Alain M.; and Gay, Michel J. L., to Office National d'Etudes et de Recherches Aerospatiales. Ball electrostatic accelerometer. 3,742,767, Cl. 73-517.00b.

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Bernardi, Eugene P., to Bernardi Bros., Inc. Public rest room cleaning system. 3,742,520, Cl. 4-1.000.

Bernstien, Joseph. Body supporting device. 3,742,532, Cl. 5-110.000.

Beroza, Morton; McGovern, Terrence P.; Schwartz, Paul H., Jr.; and Hamilton, Donald W., to United States of America, Agriculture. Mixtures of cyclohexanealkanoic acids, their esters and eugenol as attractions for the Japanese beetle. 3,743,719, Cl. 424-84.00.

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Berth, Michel; Sesvignes, Francois; and Piaget, Claude, to U.S. Philips Corporation. Radiation-sensitive semiconductor target for a camera tube. 3,743,899, Cl. 317-235.00r.

Bertorelli, Orlando Leonard, to Huber, J. M., Corporation. Particle-size modified pigments and method of increasing pigment dispersibility. 3,743,527, Cl. 106-309.000.

Best, John F., to Owens-Illinois, Inc. Method and apparatus for applying a carrier to cluster of containers. 3,742,677, Cl. 53-26.000.

Bethlehem Steel Corporation: *See*—
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Betke, Adolf C., to Allis, Louis, Company, The. Firing control circuit for grid-controlled switching devices. 3,743,908, Cl. 318-345.000.

Bettermann, Dieter; and Schomisch, Alois, to Leybold-Heraeus-Verwaltung G.m.b.H. Thermal treatment of powdered or granular material. 3,742,614, Cl. 34-147.000.

Bettis, Edward S.; MacPherson, Herbert G.; Perry, Alfred M.; and Smith, Orville L., to United States of America, Atomic Energy Commission. Single fluid molten salt nuclear breeder reactor. 3,743,577, Cl. 176-49.000.

Bickham, Francis L., to Price, H. C., Co. Manual beveler and sealer for pipe coatings. 3,743,470, Cl. 425-458.000.

Bierweiler, Robert A. Building construction. 3,742,660, Cl. 52-79.000.

Biesenbach, Ginn. Method of constructing a spark wheel. 3,742,753, Cl. 72-340.000.

Bilas, Michael. Trailer vehicle suspension. 3,743,315, Cl. 280-134.00r.

Bilgutay, Ilhan M. Optical character reading system and bar code font therefor. 3,744,025, Cl. 340-146.30z.

Binard, Pierre; and Trine, Joseph, to Elphiac. Induction heating apparatus. 3,743,810, Cl. 219-10.670.

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Bingley, Donald W., to Raytheon Company. Regulated cycloconverter. 3,743,919, Cl. 321-69.00r.

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Bishop, Wayne R., to Motorola, Inc. Steam generator and gas insertion device. 3,742,904, Cl. 118-48.000.

Bitzer, Donald L.; Johnson, Michael; and Stifle, Jack, to University of Illinois Foundation. Transmitter and receiver for the transmission of digital data over standard television channels. 3,743,767, Cl. 178-5.600.

Black and Decker Manufacturing Company, The: *See*—
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Black, Terence Sidney, to Brico Engineering Limited. Fuel injection systems. 3,742,920, Cl. 123-32.0ea.

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Blanchenot, John Philip, to International Telephone and Telegraph Corporation. Coaxial cable connector. 3,744,011, Cl. 339-177.00r.

Blanie, Jean Marie Michel Paul; and Demange, Jean Marie Rene. Rheoplethysmographic device and method of operation. 3,742,936, Cl. 128-1.10z.

Blaszuk, Paul R., to United Aircraft Corporation. Self stabilizing electrodes. 3,743,881, Cl. 313-217.000.

Blatt, Leland F. Adjustable stroke retractor mechanism. 3,742,774, Cl. 74-89.150.

Blechschmidt, Hubert: *See*—
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Bloom, Melvin S.; and Fico, Sally S., to Eastman Kodak Company. Direct-print process utilizing photosensitive polyacetylenic amine salts containing carboxylate moieties. 3,743,505, Cl. 96-48.00r.

Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., to Oliver Machinery Company. Rotary cutter. 3,742,565, Cl. 29-105.00r.

Bochinski, Edmund J. Casket floral spray holder. 3,743,225, Cl. 248-27.800.

Bock, Otto, Orthopadische Industrie KG, Firma: *See*—
Munch, Josef, 3,742,528.

Bodanszky, Miklos; and Sheehan, John T., to Squibb, E. R., & Sons, Inc. Solid phase synthesis of peptides. 3,743,628, Cl. 260-88.20s.

Bodine, Albert G. Method for the sonic treating of food material. 3,743,523, Cl. 99-217.000.

Boehringer Ingelheim G.m.b.H.: *See*—
Schmidt, Gunther; Engelhorn, Robert; and Leitold, Matyas, 3,743,734.
Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,743,735.

Boeing Company, The: *See*—
Fitzsimmons, George Washington; and Chen, Wen Shuh, 3,743,967.
Gorges, Friedrich J., 3,743,219.
Hubbard, Robert M.; and Whitener, Philip C., 3,742,890.
Smith, David Harold, 3,743,222.

Bogart, Marcel J. P., to Fluor Corporation. Synthesis gas generation process. 3,743,488, Cl. 48-214.000.

Bogart, Marcel J. P., to Fluor Corporation. Process for ammonia manufacture. 3,743,699, Cl. 423-359.000.

Boise Cascade Corporation: *See*—
Bokovoy, Ronald D., 3,743,067.

Bokovoy, Ronald D., to Boise Cascade Corporation. Reversible overrunning clutch with automatic shift control. 3,743,067, Cl. 192-43.000.

Boland, Bernard W., to Motorola, Inc. Amorphous silicon film as a UV filter. 3,743,847, Cl. 250-510.000.

Bolex International S.A.: *See*—
Odone, Giovanni, 3,743,396.

Bolgert, Edwin F.; and Weeden, Eugene O., to Kohler Co. Whirlpool attachment for tubs. 3,742,521, Cl. 4-180.000.

Bollbach, James E.; and Moss, Jerome A., to Moss, Jerome A., mesne. Sign, greeting card, display or like visual article. 3,742,632, Cl. 40-128.000.

Bollmeier, Allen F., Jr.: *See*—
Mason, George W.; Bollmeier, Allen F., Jr.; and Peppard, Donald F., 3,743,696.

Bolmgren, Lester N., to Honeywell Inc. Thyristor head-firing circuit. 3,743,861, Cl. 307-252.00b.

Bondarenko, Vitaly Tikhonovich; Markin, Jury Nikandrovich; Voronov, Nikolai Stefanovich; Sagiryants, Nikolai Magdygovich; Salnikov, Ivan Ivanovich; and Petrenko, Konstantin Pavlovich. Tube-coiling machine. 3,742,749, Cl. 72-217.000.

Bonner, William Adam; Warner, Arthur Woodward, Jr.; and White, Donald Lawrence, to Bell Telephone Laboratories, Incorporated. TeO_2 acoustooptic light deflector. 3,743,970, Cl. 332-7.510.

Boragine, Carlo; and Meyer, Armin. Photographic colour material. 3,743,506, Cl. 96-73.000.

Borg-Warner Corporation: *See*—
Abendschein, Frederic H.; Harlin, Lester E.; and Mount, Alfred G., 3,743,453.
Engle, Jack F., 3,742,784.
Miller, Robert C.; Miller, Carl K.; and Paulson, Donald L., 3,743,807.
Miller, Wendell E., 3,742,982.

Borrevang, Poul; and Guddal, Erling, to Novo Terapeutisk Laboratorium A/S. 17-Sulfo-acetates of estradiol. 3,743,660, Cl. 260-397.500.

Borst, John D.: *See*—
Wafer, John A.; and Borst, John D., 3,743,884.

Boschini, Mark A.: *See*—
Poole, James P.; Snyder, Herbert C.; and Boschini, Mark A., 3,743,491.

Bossi, Dennis, to Thomas & Betts Corporation. Adapter for terminating multiconductor signal transmission cable. 3,743,925, Cl. 324-58.00r.

Bourguet, Jean-Marie; and Perret, Jean Charles, to Compagnie Francaise d'Etudes et de Construction Technip. Method of regulation of the temperature of the liquefied gas or gaseous mixture in an apparatus for the liquefaction of gaseous fluids. 3,742,721, C. 62-37.000.

Bousky, Samuel, to Ampex Corporation. Optical intensity matching means for two light beams. 3,743,378, Cl. 350-150.000.

Bowerman Bros., Inc.: *See*—
Vaughan, Hugh J., 3,743,232.

Bowmar/Ali, Inc.: *See*—
Ubillos, Peter, 3,743,920.

Boyd, William Weller, to International Business Machines Corporation. Text formatting for display. 3,744,033, Cl. 340-172.500.

Boyriven, Paul France, to Compagnie Industrielle de Mecanismes. Electric window operating mechanism. 3,742,781, Cl. 74-625.000.

Brackett, Horace D. Gutter and trough debris cleaning implement. 3,743,339, Cl. 294-19.00r.

Brackmann, Warren A.; and Dilanni, Daniel, to Rothmans of Pall Mall Canada Limited. Cigarette filter feed. 3,743,075, Cl. 198-33.00r.

Bradley, William B., to Shell Oil Company. Steerable drill string. 3,743,034, Cl. 175-61.000.

Bradshaw Incorporated: *See—*
Ashley, Paul J., 3,743,125.

Brady, W. H., Co.: *See—*
Aldrich, Walter S., 3,743,086.

Brakebill, Harold G.: *See—*
Perkins, Charles H.; Brakebill, Harold G.; Goff, Earl; and Caldwell, Edward N., 3,743,180.

Brandt, Bernd: *See—*
Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, 3,742,566.

Branson, Theodore A.: *See—*
Schmitz, Thomas R.; and Branson, Theodore A., 3,742,867.

Brantley, Richard Kirven, to Du Pont de Nemours, E. I., and Company. Method of selectively controlling undesirable vegetation. 3,743,498, Cl. 71-88.000.

Branz, Weldon K., to Lectron Industries, Inc. Golf practicing apparatus. 3,743,296, Cl. 273-185.00d.

Braun Aktiengesellschaft: *See—*
Johannsen, Hans Werner; and Oberheim, Robert, 3,743,401.

Bredeweg, Corwin J.: *See—*
Hickner, Richard A.; and Bredeweg, Corwin J., 3,743,679.

Brehm, Ronald Carl, to AMP Incorporated. Apparatus for trimming and inserting wires. 3,742,571, Cl. 29-203.00h.

Breitschwerdt, Werner; Gmeiner, Gunter; and Grabner, Christian, to Daimler-Benz Aktiengesellschaft. Adjusting arrangement for a seat. 3,743,229, Cl. 248-394.000.

Breton, Ernest J.; Wolf, Jack D.; Worden, Dexter; and Bailey, John T., to Composite Sciences Inc. Coating metallic substrate with powdered filler and molten metal. 3,743,556, Cl. 156-62.800.

Breunsbach, Maurice C., to Spirolet Corporation. Nozzle. 3,743,187, Cl. 239-489.000.

Brevko, Robert; and Mucka, John R., to Auburn Engineering, Inc. Dry powder and dust feeding apparatus. 3,743,360, Cl. 302-36.000.

Brewitz, George W., to Minnesota Mining and Manufacturing Company. Paper guide. 3,743,154, Cl. 226-113.000.

Brico Engineering Limited: *See—*
Black, Terence Sidney, 3,742,920.

Bridges, Robert M.: *See—*
Horrer, Paul L.; and Bridges, Robert M., 3,742,535.

Bridges, Robert O.; and Renaut, Paul W., said Bridges assor. to Western Electric Company, Incorporated. Apparatus for measuring contact and retractile forces of magnetically operated switches. 3,743,927, Cl. 324-28.0rs.

Bridgewater, Thomas Austin, to RCA Corporation. Automatic tuning control circuits. 3,743,944, Cl. 325-471.000.

Bristol-Myers Company: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,743,644.

Brobeck, William R.; and Lane, Buddy F., to Avco Corporation. Tire deflation pressure switch using a dimpling dome pressure sensor. 3,743,801, Cl. 200-61.250.

Brochot, Claude, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Tobacco-denicotization processes. 3,742,962, Cl. 131-143.000.

Brock, James Donald, to Textile Systems, Inc., mesne. Carpet drying method. 3,743,474, Cl. 432-8.000.

Brock, Klaus: *See—*
Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, 3,743,007.

Brockway Glass Company: *See—*
Poole, James P.; Snyder, Herbert C.; and Boschini, Mark A., 3,743,491.

Brodhacker, John W. Storage battery testing device. 3,743,931, Cl. 324-29.500.

Brokow, Adrian P.: *See—*
Arciprete, Genio R.; Brokow, Adrian P.; Dumais, Richard L.; and Stucchi, Richard F., 3,742,844.

Broneske, Reuben. Pipe mounting bracket for pressure tank. 3,742,977, Cl. 137-557.000.

Brooker, Leslie G. S.: *See—*
Webster, Frank G.; and Brooker, Leslie G. S., 3,743,638.

Broske, William Franklin, to AMP Incorporated. Method and apparatus for joining conduit. 3,742,582, Cl. 29-421.000.

Brown, Boveri & Company Limited: *See—*
Risch, Rudolf, 3,743,934.

Brown, Cicero C. Apparatus for handling cylindrical members. 3,742,563, Cl. 24-263.0dh.

Brown, John B., to Du Pont de Nemours, E. I., and Company. Device for optically measuring a dimension of a object. 3,743,428, Cl. 356-160.000.

Brown, John F., Jr.; Slusarczuk, George M. J.; and LeBlanc, Oliver H., Jr., to General Electric Company. Ion-specific membrane. 3,743,588, Cl. 204-195.00m.

Brown, Kevan; and Cavalla, John Frederick, to Wyeth, John & Brother Limited. Thiophene and furan lower alkanoic acids and derivatives. 3,743,656, Cl. 260-332.20a.

Brown, Melancthon S., to Chevron Research Company. N-polyhalovinylthio ureas as aquatic herbicides. 3,743,497, Cl. 71-66.000.

Brown, Melancthon S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. Substituted triazines. 3,743,643, Cl. 260-249.800.

Brown, Merle F.; and Lu, Chien Yang. Method and apparatus for selectively removing pre-identified articles from a conveyor system. 3,743,090, Cl. 209-34.000.

Brown, Robert A., to Rem Metals Corporation. Making investment shell molds inhibited against reaction with molten reactive and refractory casting metals. 3,743,003, Cl. 164-16.000.

Brown, Robert J. Air release friction device. 3,743,061, Cl. 188-170.000.

Brubaker, Robert F.: *See—*
Fish, Austin D.; Fisher, William G.; and Brubaker, Robert F., 3,742,736.

Brugger, Joseph A.: *See—*
Padjen, George; and Brugger, Joseph A., 3,743,535.

Brumley, Charles E. Dispenser. 3,743,135, Cl. 221-205.000.

Brumwell, Terence Jack, to Spear & Jackson (Ashberry) Limited. Cutlery and flatware. 3,742,602, Cl. 30-340.000.

Brunette, Samuel J. Multiple-use tool. 3,742,533, Cl. 7-1.00g.

Brunswick Corporation: *See—*
Peters, Guilford B., 3,743,599.

Brunswick Corporation, The: *See—*
Crimmins, William M.; Murphy, Patrick J.; Zachev, Ivan; and Grosvenor, Herbert Don, 3,743,290.

Brutschin, Gerhard: *See—*
Giessler, Horst; Lorenz, Klaus; Brutschin, Gerhard; and Walti, Marc, 3,743,116.

Bucalo, Louis, to Investors In Ventures, Inc. Devices for controlling fluid flow in living creatures. 3,742,933, Cl. 128-8.050r.

Buccafuri, Anthony F.: *See—*
Isrelli, Jack; Kassel, Aaron; and Buccafuri, Anthony F., 3,743,103.

Buck, Charles E.; and Thornburgh, William F., to General Motors Corporation. Ignition timing and throttle position control. 3,742,785, Cl. 74-860.000.

Buckler, Robert Thomas; and Strycker, Wallace Glenn, to Miles Laboratories, Inc. Amides of 3-(2-halophenyl-5-tetrazolyl)propronic acids. 3,743,646, Cl. 260-293.690.

Buelow, Horst: *See—*
Hohenschutz, Heinz; Hornberger, Paul; and Buelow, Horst, 3,743,674.

Bulakh, Georgy Ivanovich; and Vysotsky, Vladimir Alexandrovich. Rig for rotary drilling of holes and shafts. 3,743,037, Cl. 175-334.000.

Bullis, Robert H.; and Penney, Albert W., Jr., to United Aircraft Corporation. Transverse gas laser. 3,743,963, Cl. 331-94.500.

Buratti, Massimo: *See—*
Di Russo, Ettore; Buratti, Massimo; and Conserva, Mario, 3,743,549.

Bures, Ladislav: *See—*
Rencin, Miloslav; Mladek, Milos; and Bures, Ladislav, 3,743,065.

Burkardt, Lohr A.: *See—*
Finnegan, William G.; Burkardt, Lohr A.; McLean, William B.; McEwan, William S.; and Larocca, Edward W., 3,742,859.

Burns, Joseph, to Fairchild Camera and Instrument Corporation. Photodiode apparatus for reducing beam drift of a cathode ray tube display system. 3,743,883, Cl. 315-21.000.

Burroughs Corporation: *See—*
Fussell, Richard H., 3,743,857.
Holz, George E., 3,743,914.
Kupsky, George A., 3,743,879.
Rossell, Allen J., 3,743,860.

Burrows Equipment Company: *See—*
Fathauer, George H., 3,743,930.

Burt, F. N., Company, Inc.: *See—*
Richert, Wilbert K., 3,743,085.

Burton, John A.: *See—*
Eaton, George H.; and Burton, John A., 3,743,113.

Buss A.G.: *See—*
Koller, Hans, 3,742,611.

Butler, Ernest J.; Gade, John N.; and Herberger, Robert J., to Eastman Kodak Company. Method and means for handling film cartridges. 3,742,586, Cl. 29-430.000.

Butler, Tony W., Jr. Single Wankel diesel engine-compression in cross-ported horizontal tandem. 3,742,917, Cl. 123-8.050.

Buttriss, Albert T., to Eaton Corporation. Magazine assembly for fastener driving apparatus. 3,742,577, Cl. 29-212.00r.

Butts, LaVerne D. Fish hook device. 3,742,639, Cl. 43-42.390.

Buxton, Aldon L., to I-T-E Imperial Corporation. Plug-in receptacle-circuit breaker device having unitary housing. 3,743,891, Cl. 317-119.000.

Byers, James Otto, Jr., to Sanders Associates, Inc. Hydraulic control system. 3,742,980, Cl. 137-625.620.

Byers, James Otto, Jr., to Sanders Associates, Inc. Flow control valve with single spool second stage. 3,742,981, Cl. 137-625.630.

Byrd, Carlisle O., Jr., to Carborundum Company, The. Protector for high temperature furnace insulation supports. 3,742,670, Cl. 52-506.000.

Byrne, James J.; Blackwell, Francis O., III; and Shokite, Richard J., to Warnaco Inc. Control for sewing machine. 3,742,878, Cl. 112-121.120.

Cabot Corporation, mesne: *See—*
Baranow, Sanford; and Klingler, Leo J., 3,743,548.

Cadbury Limited: *See—*
Greeves, Thomas William, 3,743,152.

Cady, Paxton; and Welch, William J., to Bactomatic, Incorporated. Microbiological detection apparatus. 3,743,581, Cl. 195-103.50r.

Cahan, Leslie Lawrence. Key receptacle for an automotive vehicle. 3,742,741, Cl. 70-63.000.

Cailloux, Paul, to Promecam Sisson-Tekmann. Shearing machine. 3,742,801, Cl. 83-391.000.

Calame, Michel, to Societe Genevoise d'Instruments de Physique. Measuring device of two dimensional displacements. 3,742,610, Cl. 33-172.00f.

Caldwell, Edward N.: *See—*
Perkins, Charles H.; Brakebill, Harold G.; Goff, Earl; and Caldwell, Edward N., 3,743,180.

California Pellet Mill Company: *See—*
Alessio, Aldo M., 3,743,462.

Callahan, Joseph C., to United States of America, Atomic Energy Commission. Cell for measuring stresses in prestressed concrete. 3,742,757, Cl. 73-88.50r.

Calleson, Donald A., to Liggett & Myers Incorporated. Method and apparatus for impregnating fibrous filter material. 3,743,528, Cl. 117-9.000.

Camarco, Thomas J. Rolling iron. 3,742,630, Cl. 38-100.000.

Camilleri, Charles Francis: *See—*
Gusdorf, Walter; and Camilleri, Charles Francis, 3,742,870.

Cammack, Thomas A.: *See—*
Donahue, William J.; and Cammack, Thomas A., 3,742,854.

Camp, Nat. Boiling chamber for steam generator. 3,743,780, Cl. 219-288.000.

Campbell, Darrel: *See—*
Nicholson, Allan D.; and Campbell, Darrel, 3,743,688.

Campbell, Robert L.; and Roatcap, Daniel A. Bottle alignment device for bottle filling machines. 3,742,989, Cl. 141-371.000.

Campbell, Rouel R. Epicyclic camera. 3,743,393, Cl. 352-84.000.

Campbell Soup Company: *See—*
Mayo, William Harold; Winters, Arthur Burnett; Davis, James Bradley, Jr.; Edenfield, Harrison; and Gainous, Aubrey Cornelius, 3,743,024.

Camper, Sydney D.; and Yoder, Worth N. Cabinet front assembly. 3,743,373, Cl. 312-257.0sk.

Canadian Industries Limited: *See—*
Yethon, Andrew Edward, 3,743,615.

Canadian Patents and Development Limited: *See—*
Dauphinee, Thomas M., 3,742,764.
Redhead, Paul A., 3,743,876.
Shaw, Geoffrey T.; and Parsons, Basil I., 3,743,709.

Canon Camera Kabushiki Kaisha: *See—*
Komori, Shigehiro, 3,743,274.

Canon Kabushiki Kaisha: *See—*
Kohtani, Yotaka, 3,742,826.
Komori, Shigehiro; Sato, Jiro; and Umezawa, Kazumi, 3,743,406.
Mashimo, Yukio, 3,743,912.

Capra, Uberto. Vehicle drying apparatus. 3,742,615, Cl. 34-229.000.

Carborundum Company, The: *See—*
Byrd, Carlisle O., Jr., 3,742,670.
Rowe, Russell L., 3,742,651.

Carlson, Chesley F., Co.: *See—*
Pamlenyi, George, 3,743,821.

Carlson, Heinz F. Wafer breaker. 3,743,148, Cl. 225-2.000.

Carnahan, Edward L. Carving and engraving machine. 3,742,816, Cl. 90-13.100.

Carpenter, Ralph A., to United States of America, Navy. Compressive scanning receiver. 3,743,942, Cl. 325-337.000.

Carpentier, Anthony L.; and Rodriguez, Juan A., to Storage Technology Corporation. Detection and correction of phase encoded data. 3,744,023, Cl. 340-146.10f.

Carpigiani, Poerio, to APAW S.A. Ice cream machine. 3,742,724, Cl. 62-331.000.

Carrier Corporation: *See—*
Berger, Isaac, 3,742,725.
English, Richard A., 3,742,726.
Farney, Samuel D.; and Wood, Russell E., 3,743,010.
Geary, Carl H., 3,743,434.
Kaiser, Kenneth K., 3,742,727.

Carrier Engineering Company, Limited: *See—*
Johnston, Edward, 3,742,901.

Carroll, John J., to United States of America, Navy. Voltage controlled up-down clock rate generator. 3,743,951, Cl. 328-181.000.

Case, Everett N., to Atlantic Richfield Company. Process for the recovery in useful form of fluorine values from phosphate rock while producing phosphoric acid. 3,743,725, Cl. 423-166.000.

Case, J. I., Company: *See—*
Seaberg, David H., 3,743,126.

Casey, William J. Telephone doll. 3,742,645, Cl. 46-242.000.

Castellani, Edward J., to Thomas & Betts Corporation. Strain relief assembly. 3,744,008, Cl. 339-103.00b.

Castonguay, Richard N., to Mica Corporation, The. Printed circuit board fabrication. 3,743,583, Cl. 204-27.000.

Caterpillar Tractor Company: *See—*
Alleman, Mark M.; and Marx, Rodger L., 3,743,260.
Engel, William K., 3,742,818.
Gordon, Phillip B., Jr.; and Whitehurst, Gerald Edward, 3,742,925.
Hennelly, Robert, 3,743,259.
Wait, John D., Jr., 3,742,684.
Westervelt, Ralph; Fratzke, Lawrence F.; and Stump, Ronald C., 3,743,068.

Cator, Edward J.; and Ewald, William P., to Eastman Kodak Company. Battery checker for cameras. 3,742,831, Cl. 95-10.0ce.

C.A.V. Limited: *See—*
Albert, Kenneth; and Kemp, Walters, 3,742,926.

Cavalla, John Frederick: *See—*
Brown, Kevan; and Cavalla, John Frederick, 3,743,656.

Cayol, Andre: *See—*
Agranier, Jean-Claude; and Cayol, Andre, 3,743,578.

CEB Limited: *See—*
Geleziunas, Rimas J., 3,743,981.

Celanese Corporation: *See—*
Hillman, Melville E. D.; and Baylis, Anthony B., 3,743,669.
Prince, Arthur E., Jr., 3,743,479.

Chabrerie, Jean-Pierre; and Mailfert, Alain Jacques, to Agence Nationale de Valorisation de la Recherche (ANVAR). Homopolar machines with contacts of liquid metal. 3,743,874, Cl. 310-178.000.

Chadwell, James I. Flexible cleaner for the sole of a golf shoe. 3,742,624, Cl. 36-7.300.

Chambers, Constantine P. Selective closure for attachment to cigarette containers and the like. 3,743,136, Cl. 221-213.000.

Chang, Richard S., to Mattel, Inc. Control means for stunt vehicles. 3,743,279, Cl. 272-31.00a.

Chapman, Howard R. Rotary engine. 3,743,451, Cl. 418-61.000.

Charbonnages de France: *See—*
Saillard, Pierre, 3,743,937.

Chase, John Donald; and Potter, Robert Louis, to American Cyanamid Company. Submicron metal oxide particles and their process for manufacture. 3,743,708, Cl. 423-617.000.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,743,994.

Chemed Corporation, mesne: *See—*
Cooper, Joseph; and Corbett, William J., 3,743,542.

Chemical Construction Corporation: *See—*
Shah, Indravadan S., 3,743,483.

Chemotronics International, Inc.: *See—*
Vinton, Clarence Samuel; and Rice, Warren Albert, 3,743,692.

Chemstress Industries, Inc.: *See—*
Rubenstein, David, 3,742,985.

Chen, David T. V.; and Shih, Ten Fuh. Automatic feeder for aquatic animals. 3,742,912, Cl. 119-51.00r.

Chen, Karl K.: *See—*
Jeromson, James R., Jr.; and Chen, Karl K., 3,742,754.

Chen, Wen Shuh: *See—*
Fitzsimmons, George Washington; and Chen, Wen Shuh, 3,743,967.

Cheney, Lee Cannon: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,743,644.

Cherevik, Jury Ivanovich: *See—*
Kozhevnikov, Sergei Nikolaevich; Cherevik, Jury Ivanovich; Tkachenko, Arkady Semenovich; Klimkovsky, Islav Mecheslavovich; Shvedchenko, Anton Antonovich; and Pljusnin, Vladimir Vasilievich, 3,742,751.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,743,497.
Brown, Melancthon S., 3,743,643.
Mulaskey, Bernard F., 3,743,594.

Chiku, Takewo; Kamigaito, Osami; and Isogai, Akio, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Separator for controlling alkali metal ion flow in an electrode active material or electrolyte. 3,743,543, Cl. 136-6.0fs.

Childs, Edmund; and Ostrowski, Raymond, to KLM Company, The. Closure and closure die. 3,743,128, Cl. 215-43.000.

Chipman, Jack R.; and Morrow, Joseph E., to Magnavox Company, The. Synchronizing signal separation circuit. 3,743,774, Cl. 178-7.30s.

Chodorov, Rachel; and Korzen, Benni. Board game apparatus. 3,743,293, Cl. 273-130.00r.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Ando, Kunio; Oishi, Hideo; Sagawa, Takao; and Hirano, Seiji, 3,743,724.
Kawai, Shoji, 3,743,429.

Church, Ralph E., to General Electric Company. Dynamoelectric machine lubricant storage arrangement. 3,743,871, Cl. 310-90.000.

Ciaccio, Peter L., to Flexible, Inc. Safety overload clutch for sewer-rodding machines and the like, with loading indicator. 3,742,548, Cl. 15-104.3sn.

Ciba-Geigy AG: *See—*
Martin, Henry; Beriger, Ernst; and Ebner, Ludwig, 3,743,670.
Zwahlen, Guenther, 3,743,526.

Ciba-Geigy Corporation: *See—*
Baschang, Gerhard; Frei, Joerg; Morel, Charles; and Wacker, Oskar, 3,743,663.
Kleiner, Eduard K., 3,743,623.
Schlapfer, Hans, 3,743,639.

Cichelli, Mario Thomas; Colley, David Ross; Etchellis, Arthur William, III; and Smith, William James, to Du Pont de Nemours, E. I., and Company. Method for rendering microcellulose staple fibers self-inflatable in air involving the continuous transporting f the fibers through a reaction pipeline. 3,743,694, Cl. 264-343.000.

Cincinnati Milacron Inc.: *See—*
Wise, Robert G., 3,743,910.

Cini, Adrian V., to Acme-Hamilton Manufacturing Corporation. Adjustable die heads for extruders and the like. 3,743,456, Cl. 425-112.000.

Cini, Adrian V., to Acme-Hamilton Manufacturing Corporation. Stock flow control means for extruders and the like. 3,743,457, Cl. 425-113.000.

Cirson, Harold Vivian: *See—*
Marks, Austin Cedric; and Cirson, Harold Vivian, 3,742,905.

CIS Radiopharmaceuticals Inc.: *See—*

Deutsch, Marshall E., 3,743,714.

Clairol Incorporated: *See—*
Halasz, Alexander, 3,743,678.

Clark, Arthur C., to Holiday Vehicle Specialties, Inc. Vehicular steps. 3,743,320, Cl. 280-166.000.

Clark, Daivd A. Container with reclosable pull-out pouring spout. 3,743,164, Cl. 229-17.00r.

Clark Equipment Company: *See—*
Howard, Wayne R.; and Ratliff, Richard L., 3,743,070.
Shealy, Noah A., 3,742,783.
Visser, Peter J., 3,743,108.
Walser, Melvin L.; and Lindly, Ross N., 3,742,628.

Clark, James W.: *See—*
Mensing, Arthur E.; Clark, James W.; and Stoeffler, Richard C., 3,743,095.

Clark, Margie Irene. Bedside rail cover. 3,742,530, Cl. 5-331.000.

Clauss, Wolfgang: *See—*
Todt, Hans-Gunther; Clauss, Wolfgang; and Dahms, Wolfgang, 3,743,584.

Cleland, Hugh M.: *See—*
Dahlin, Robert K.; Arnold, Harold J.; Cleland, Hugh M.; Lyon, Robert B.; and Polkinghorn, Robert W., 3,743,948.

Cline, Carl F.: *See—*
Wilkins, Mark L.; Holt, Albert C.; Cline, Carl F.; and Froeschner, Kenneth E., 3,743,569.

Cline, Carl F.; and Wilkins, Mark L., to United States of America, Army. Preparation of beryllium boride armor by direct casting. 3,743,006, Cl. 164-128.000.

Coady, David R.: *See—*
Peterson, Russell I., Jr.; and Coady, David R., 3,743,155.

Coats & Clark, Inc.: *See—*
Hannes, Karl, 3,742,555.

Coffee, Irvin B. Planter apparatus. 3,742,877, Cl. 111-6.000.

Coffin, Lamar D.: *See—*
Cusanelli, Dominic C.; Coffin, Lamar D.; and Rajcevic, Harold P., 3,743,501.

Cogswell, James M. Rotary fork. 3,742,840, Cl. 99-421.00a.

Cohen, Barry G. Illumination assembly. 3,743,825, Cl. 240-2.0ma.

Cohen, Gerson: *See—*
Scopp, Irwin W.; and Cohen, Gerson, 3,742,549.

Cohn, Harold J.; and Weems, Clyde. Roller mounted nailing machine. 3,743,158, Cl. 227-8.000.

Coilcraft, Inc.: *See—*
Renskers, John O.; Liebman, Charles S.; Salzman, Robert J.; and Schroeder, Charles E., 3,743,990.

Colbridge, Thomas D.: *See—*
Saul, Samuel, Jr.; and Colbridge, Thomas D., 3,743,115.

Coleswood Products, Inc.: *See—*
Crippen, Huston D., 3,742,913.

Colgate-Palmolive Company: *See—*
Douglas, Livingston C., 3,743,084.
Pensak, Philip, 3,742,994.

Colley, David Ross: *See—*
Cichelli, Mario Thomas; Colley, David Ross; Etchellis, Arthur William, III; and Smith, William James, 3,743,694.

Collins, David J.: *See—*
Kapsambelis, Christos B.; and Collins, David J., 3,743,819.

Collins, George E.: *See—*
Hayes, John R.; and Collins, George E., 3,742,775.

Collins Radio Company: *See—*
Hemme, William R., 3,743,971.
Hutchinson, William M.; and Middlestead, Richard W., 3,743,775.

Comeau, Andre; Roeloes, Wendell; Tette, James; and Taschenberg, Emil Frederick, to Research Corporation. Method of attracting and trapping mole moths of the species Paralobesia Viteana. 3,743,718, Cl. 424-84.000.

Comley, William, Jr.; and Hammontre, Michael P., to McDonnell Douglas Corporation. Phase sensitive demodulator. 3,743,952, Cl. 329-110.000.

Commissariat a l'Energie Atomique: *See—*
Agranier, Jean-Claude; and Cayol, Andre, 3,743,578.
Gelis, Christian, 3,743,712.

Commonwealth Scientific and Industrial Research Organization: *See—*
Hadaway, Bernare Milton, 3,742,696.

Compagnie de Signaux et d'Entreprises Electriques: *See—*
Alt, Gilbert L., 3,743,935.

Compagnie Francaise d'Etudes et de Construction Technip: *See—*
Bourguet, Jean-Marie; and Perret, Jean Charles, 3,742,721.

Compagnie Generale de Radiologie: *See—*
Hommerin, Michel, 3,743,200.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Verdier, Henri, 3,743,000.

Compagnie Industrielle de Mecanismes: *See—*
Boyriven, Paul France, 3,742,781.

Composite Sciences Inc.: *See—*
Breton, Ernest J.; Wolf, Jack D.; Worden, Dexter; and Bailey, John T., 3,743,556.

Computer Identics Corporation: *See—*
Kapsambelis, Christos B.; and Collins, David J., 3,743,819.

Computer Transceiver Systems, Inc.: *See—*
Jacobson, Allen G.; and Epstein, Maurice J., 3,743,763.

Computer Transmission Corporation: *See—*
Sanders, Ray W.; and Harting, Stephen W., 3,744,051.

Concast AG: *See—*
Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, 3,743,007.

Condit, Philip M.: *See—*
Sweeney, Thomas E.; Condit, Philip M.; Ormiston, Robert A.; and Nixon, Walter Barry, 3,743,218.

Confer, Raymond C.; and Talmon, Floyd H., to Air-lock plastics, Inc. Blow molded article of thermoplastic material having a threaded insert therein. 3,742,995, Cl. 150-.500.

Connele, Eugene W.: *See—*
Elkins, William; and Connele, Eugene W., 3,743,368.

Conrad, Robert F. Thermoplastic yarn plasticizing device and method of plasticizing thermoplastic yarn. 3,742,695, Cl. 57-157.0ts.

Conserva, Mario: *See—*
Di Russo, Ettore; Buratti, Massimo; and Conserva, Mario, 3,743,549.

Consiglio Nazionale Delle Recerche: *See—*
Credali, Lino; and Parrini, Paolo, 3,743,597.

Consiglio Nazionale Delle Ricerche: *See—*
Credali, Lino; and Parrini, Paolo, 3,743,596.

Consolidated International Chemical Co. Inc.: *See—*
Riccio, Katherine Delia, 3,743,170.

Constable, Geoffrey E. P.; and Lloyd, Dennis Arthur, to Smiths Industries Limited. Access-control equipment and item-dispensing systems including such equipment. 3,743,134, Cl. 221-2.000.

Container Corporation of America: *See—*
Helms, Charles Robert, 3,743,163.

Continental Can Company, Inc.: *See—*
Erlandson, Paul M., 3,742,746.

Continental Scale Corporation: *See—*
Hutchinson, William Y.; and Kushmuk, Walter P., 3,743,040.

Cook, Gerald H.; and Thomas, Paul W., to Polaroid Corporation. Photographic system employing film protuberance for controlling the application of film processing fluid. 3,742,836, Cl. 95-89.00r.

Cooley, Robert H. Pallet-load straightener device. 3,743,112, Cl. 214-6.00s.

Cooper, Abraham J. Dental impression accessory and method. 3,742,605, Cl. 32-17.000.

Cooper, Joseph; and Corbett, William J., to Chemed Corporation, mesne. Paint removing method. 3,743,542, Cl. 134-31.000.

Cope, Geoffrey Wilton, to Dresser Industries, Inc. Coupling valve actuator for automatic pneumatic coupling system. 3,743,110, Cl. 213-76.000.

Copenhagen, Donald M.: *See—*
Smith, Donald Arthur; and Copenhagen, Donald M., 3,743,627.

Copland, George V., to Halliburton Company. Method and apparatus for electronically monitoring a field of view. 3,743,768, Cl. 178-6.800.

Copley Press, Inc.: *See—*
Wheaton, Robert E., 3,742,903.

Corbett, William J.: *See—*
Cooper, Joseph; and Corbett, William J., 3,743,542.

Corcelle, Francois; Angely, Jean; and Delort, Jean-Pierre. Device for tracing seams for welding by electron bombardment. 3,743,776, Cl. 219-121.0eb.

Cork, Gordon H.; and Tenniswood, David M., to Gemco Electric Company. Selector switch mechanism with adjustable radial cam insert members having circumferential overlap flange. 3,743,799, Cl. 200-6.00b.

Corning Glass Works: *See—*
Andrysiak, Carl D., 3,743,494.
Farrauto, Robert J.; and Haynes, William L., 3,743,525.
Wesel, Peter E., Jr., 3,743,329.

Coronet Container Corporation: *See—*
Heavner, Larry W., 3,743,166.

Corrugated Paper Manufacturing Pty, Limited: *See—*
Lasker, Noel Emanuel, 3,743,173.

Corsi, George L.: *See—*
Berens, Alfred S.; Bainard, Dean R.; and Corsi, George L., 3,743,305.

Costanzo, Samuel P. Adjustable bearing lock and lubrication seal for can seamer. 3,742,883, Cl. 113-24.000.

Coughlin, Barring, Jr.: *See—*
Fitzhugh, Edward F., Jr.; Coughlin, Barring, Jr.; and Fitzhugh, William E., 3,743,250.

Coulter, Albert W., Jr.; Gibson, Daniel L.; and Nimerick, Kenneth H., to Dow Chemical Company, The. Galactomannan gum based composition for sealing permeable formations. 3,743,613, Cl. 260-17.4st.

Courtot, Louis B.; and Dickinson, Richard H., Jr., to Weatherland Company, The. Releasable tube coupling. 3,743,326, Cl. 285-105.000.

Cowger, Amon Pete, Jr. Blast furnace cooling jacket. 3,743,262, Cl. 266-32.000.

Cowie, Eric G.: *See—*
Legg, Brian C.; and Cowie, Eric G., 3,743,921.

CPC International Inc.: *See—*
Molotsky, Hyman M., 3,743,621.

Craft Systems, Inc.: *See—*
Johnston, Mack S., 3,743,145.

Craig, Dwin R., to Ingenuics, Inc. Feed mechanism and conically-shaped mandrel having tacky surface supporting web on its edge. 3,743,563, Cl. 156-391.000.

Cramer, Harold W. Step stool structure. 3,743,051, Cl. 182-15.000.

Crary, Ely J. Contact lens inserter. 3,743,337, Cl. 294-1.0ca.

Crawford, Theodore Chester; and Daugherty, Verdean, to Thiokol Chemical Corporation. Diammonium hydrazinium tetraperchlorate and process of making. 3,743,701, Cl. 423-386.000.

Creamer, Alelene B. Cigarette perforating device. 3,742,963, Cl. 131-258.000.

Creative Tools, Inc.: *See—*
Whiteford, Carlton L., 3,742,787.

Credali, Lino; and Parrini, Paolo, to Consiglio Nazionale Delle Ricerche and Montecatini Edison S.p.A. Osmosis process. 3,743,596, Cl. 210-23.000.

Credali, Lino; and Parrini, Paolo, to Consiglio Nazionale Delle Recerche and Montecatini Edison S.p.A. Osmosis process. 3,743,597, Cl. 210-23.000.

Crener, Bengt Olof; Blaeldh, Erik Arne; and Ernolf, Stig Carl-Oskar, to Aktiebolaget Electrolux. Surface treating apparatus. 3,742,546, Cl. 15-50.00r.

Cretten, Jean Paul. Vehicle lighting. 3,743,886, Cl. 315-83.000.

Crigger, Ralph Dean. Angularly adjustable cymbal mounting. 3,742,810, Cl. 84-422.000.

Crimmins, William M.; Murphy, Patrick J.; Zachev, Ivan; and Grosvenor, Herbert Don, to Brunswick Corporation, The. Foul detecting system for a bowling game. 3,743,290, Cl. 273-50.000.

Crippen, Huston D., to Coleswood Products, Inc. Automatic feeding device for animals. 3,742,913, Cl. 119-51.110.

Croce, Louis J.; Bajars, Laimonis; and Gabliks, Maigonis, to Petro-Tex Chemical Corporation. Oxidative dehydrogenation process. 3,743,683, Cl. 260-680.000.

Croner, Jerome T. Compartmented beverage container. 3,743,520, Cl. 99-171.00b.

Crooks, Walter, to International Business Machines Corporation. Electrophotographic developer composition containing boron nitride. 3,743,682, Cl. 252-62.100.

Crow, Morgan Le Von, to Dresser Industries, Inc. Hydraulic anchor well tool. 3,743,016, Cl. 166-120.000.

Crowell Designs, Inc.: *See—*
Davenport, William R.; and Jones, William D., 3,742,978.

Crowley, Walter A. Stable multiple-chamber air cushion boat hull. 3,742,888, Cl. 114-67.00a.

Crown Zellerbach Corporation: *See—*
Herschler, Robert John, 3,743,727.
Nowotny, Kurt A.; and Shilling, Wilbur L., 3,743,272.
Yang, Christen H. C.; and Kinkler, William A., Jr., 3,743,570.

Croyle, Jack V.; and Swett, James B., to Dart Industries Inc. Closure for open-mouthed containers or tubular vessels. 3,743,131, Cl. 220-24.500.

Crucible Inc.: *See—*
Kinsch, Anton H., Jr.; Rogers, William M.; and Lake, Robert A., 3,743,261.

Crum, McDonald; and Hampton, Edward L., to Lear Siegler, Incorporated. Multiple position reclining chair assembly. 3,743,349, Cl. 297-85.000.

Crutcher, James E.; and Davis, Lawrence P., to Sperry Rand Corporation. Gyroscope. 3,742,769, Cl. 74-5.00r.

Cruz, Mamerto M., Jr.: *See—*
Battista, Orlando A.; Cruz, Mamerto M., Jr.; and Hait, Merritt R., 3,742,955.

Cumberland Engineering Company: *See—*
Peterson, Russell I., Jr.; and Coady, David R., 3,743,155.

Cumberland Packing Corporation: *See—*
Eisenstadt, Marvin E., 3,743,518.

Cunningham, Robert D.: *See—*
Woodworth, William H.; and Cunningham, Robert D., 3,742,812.

Curry, Harold George: *See—*
Attwood, Brian William; and Curry, Harold George, 3,743,573.

Cusanelli, Dominic C.; Coffin, Lamar D.; and Rajcevic, Harold P., to American Metal Climax, Inc. Zinc recovery process. 3,743,501, Cl. 75-109.000.

Cushing, Charles J.; Schwind, Kurt C.; and Vander Neut, Richard D., to Philco-Ford Corporation. Radiation sensitive means for detecting flaws in glass. 3,743,431, Cl. 356-239.000.

Cutler, Leouard S.; and Lacey, Richard F., to Hewlett-Packard Company. Memory protect for magnetic bubble memory. 3,744,042, Cl. 340-174.0tf.

Dagerford, Ernest C., to BEC Products, Inc., mesne. Air conditioning and heating control system including control panel. 3,743,009, Cl. 165-11.000.

Dahle, Norman A., to Gulf Research & Development Company. 2-(2', 5'-Dimethylpyrrolidinyl)-5-aryl-1, 3,4-thiadiazoles. 3,743,650, Cl. 260-306.80d.

Dahlin, Robert K.; Arnold, Harold J.; Cleland, Hugh M.; Lyon, Robert B.; and Polkinghorn, Robert W., to North American Rockwell Corporation. Pulse train sorter. 3,743,948, Cl. 328-119.000.

Dahms, Wolfgang: *See—*
Todt, Hans-Gunther; Clauss, Wolfgang; and Dahms, Wolfgang, 3,743,584.

Daida Chemical Engineering Corporation: *See—*
Morimoto, Yasuo, 3,743,484.

Daido Steel Co., Ltd.: *See—*
Furuhashi, Haruyoshi, 3,743,752.

Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Gmeiner, Gunter; and Grabner, Christian, 3,743,229.
Oblander, Kurt; and Fricker, Ludwig, 3,742,923.

Daiwa Can Co., Ltd.: *See—*
Nagasawa, Yoshio; and Yano, Shunji, 3,743,522.

Dale, John C., to Sanders Associates, Inc. Directional hydrophone. 3,744,017, Cl. 340-8.000.

Damabot Radioisotope Laboratories, Ltd.: *See—*
Kato, Sadatake; and Kurata, Kunio, 3,743,713.

Danfoss A/S: *See—*
Mungaard, Hans, 3,743,538.

Danklefsen, Lawrence H. Combination pool table and billiard balls including erratic movement and shot directing features. 3,743,288, Cl. 273-6.000.

Danz, Jay Roger. Stop fall pole climbing device. 3,743,050, Cl. 182-9.000.

Dapolito, August A., 1/2 to Marchisano, Michael. Door-operated brake for automobiles. 3,743,047, Cl. 180-111.000.

Dappen, Glen M.; and Smith, Donald A., to Eastman Kodak Company. Developer scavengers for image transfer systems. 3,743,504, Cl. 96-3.000.

Darrow, Kenneth A.; and Hibbs, Louis E., Jr., to General Electric Company. Abrasive grinding wheel construction. 3,742,654, Cl. 51-206.00r.

Dart Industries Inc.: *See—*
Croyle, Jack V.; and Swett, James B., 3,743,131.

Dassler, Adolf. Sports shoes. 3,742,622, Cl. 36-2.5am.

Data Source Corporation: *See—*
Pooley, Charles Kent; and Dillingham, Edward, 3,743,837.

Daugherty, Verdean: *See—*
Crawford, Theodore Chester; and Daugherty, Verdean, 3,743,701.

Dauphinee, Thomas M., to Canadian Patents and Development Limited. Direct reading resistance thermometer. 3,742,764, Cl. 73-362.0ar.

Davenport, William R.; and Jones, William D., to Crowell Designs, Inc. Faucet for both pressurized and non-pressurized water systems. 3,742,978, Cl. 137-565.000.

David, Melvin J. Merchandise display apparatus. 3,743,105, Cl. 211-153.000.

Davis, Billy W., to Schlumberger Technology Corporation. Foam seismic streamer. 3,744,016, Cl. 340-7.00r.

Davis, Dana L., to Hadco Printed Circuits, Inc. Method for making a coated printed circuit board. 3,742,597, Cl. 29-625.000.

Davis, James Bradley, Jr.: *See—*
Mayo, William Harold; Winters, Arthur Burnett; Davis, James Bradley, Jr.; Edenfield, Harrison; and Gainous, Aubrey Cornelius, 3,743,024.

Davis, Lawrence P.: *See—*
Crutcher, James E.; and Davis, Lawrence P., 3,742,769.

Davis, Steven Jay, to General Datacomm Industries. Closed data loop test apparatus for data transmission modem. 3,743,938, Cl. 325-67.000.

Davis, William F., to Motorola, Inc. Integrated current supply circuit. 3,743,850, Cl. 307-32.000.

Dawson, Hylton: *See—*
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,743,185.

Day, Paul L., to Park-Ohio Industries, Inc. Resistince heating apparatus for elongated workpieces of varied lengths. 3,743,778, Cl. 219-156.000.

Dayco Corporation: *See—*
Leffler, Donald E.; and Dempster, William B., 3,742,852.

De Cook, Etienne Marie, to Agfa-Gevaert N.V. Device for detecting irregularities in a moving material. 3,743,838, Cl. 250-219.0df.

De Diemar, Ronald; and Schuman, Le Roy J., to Barber-Greene Company. Gyratory crusher having anti-spin means for head. 3,743,193, Cl. 241-207.000.

De Fraeye, Dirk Jules Remi, to U.S. Philips Corporation. Halogen filament lamp. 3,743,375, Cl. 316-20.000.

De Jong, Henricus Cornelis Johannes, to Heemaf N.V. Synchronous electric machine. 3,743,873, Cl. 310-165.000.

De Laurentis, Angelo A.: *See—*
Gumpper, John C.; and De Laurentis, Angelo A., 3,743,991.

De Lavalette, Pierre de Lacroix; and Hein, Daniel, to SKF Compagnie d'Applications Mecaniques. Free wheel drive. 3,743,066, Cl. 192-41.00a.

De Seversky, Alexander P., to Seversky Electronatom Corporation. Liquid distributors for wet electrostatic precipitators. 3,742,681, Cl. 55-119.000.

De Troyer, Georges D.: *See—*
Smith, Joseph E.; and De Troyer, Georges D., 3,742,773.

De Wied, David, to Akzona Incorporated, mesne. Psychopharmacological preparation. 3,743,726, Cl. 424-177.000.

Dealy, John F.; and York, Michael W., to Fairchild Industries, Inc. Firearm having a carrying handle and associated rear sight. 3,742,636, Cl. 42-1.00s.

Decision Data Corporation: *See—*
Miller, Robert J.; and Dorfman, Walter, 3,743,275.

Dekavallas, Emmanuel G. Candle dipping machine. 3,742,900, Cl. 118-6.000.

Del Castillo, Juan M. Optical metronome. 3,743,758, Cl. 84-484.000.

Delort, Jean-Pierre: *See—*
Corcelle, Francois; Angely, Jean; and Delort, Jean-Pierre, 3,743,776.

Delpaggio, Anthony F., to Park-Ohio Industries, Inc. Method and apparatus for inductively heating valve seats. 3,743,809, Cl. 219-10.570.

Deluca, Hector F.; Holick, Michael F.; and Garabedian, Michele, to Wisconsin Alumni Research Foundation. 5,6-Trans-25-hydroxycholecalciferol. 3,743,661, Cl. 260-397.200.

Demag Aktiengesellschaft: *See—*
Ehm, Karl Horst, 3,742,748.

Demange, Jean Marie Rene: *See—*
Blanie, Jean Marie Michel Paul; and Demange, Jean Marie Rene, 3,742,936.

Demarest, Philip C., to Refac Technology Development Corporation, mesne. Dual filament readout lamp. 3,743,880, Cl. 313-109.500.

Demers, Harlan J. Concealed anchoring means in laminated beams. 3,742,675, Cl. 52-721.000.

Demler, Henry William, Sr., to AMP Incorporated. Rotary cam axially actuated diaphragm valve. 3,743,245, Cl. 251-257.000.

Dempster, William B.: *See—*
Leffler, Donald E.; and Dempster, William B., 3,742,852.

Denki Onkyo Co., Ltd.: *See—*
Kawada, Takehiko, 3,743,868.

Dennis, Edward J. Golf swing practice club. 3,743,297, Cl. 273-193.00a.

Dennison Manufacturing Company, mesne: *See—*
Arciprete, Genio R.; Brokow, Adrian P.; Dumais, Richard L.; and Stucchi, Richard F., 3,742,844.

Deskey, Donald, mesne: *See—*
Heston, Russell G., Jr., 3,742,902.

Desmond, Richard J.; and Koenig, Paul W., to General Electric Company. Processes for the fabrication of protected semiconductor devices. 3,742,599, Cl. 29-588.000.

Deutsch, Marshall E., to CIS Radiopharmaceuticals Inc. Novel carrier preparations for injectable radioactive compositions. 3,743,714, Cl. 424-1.000.

Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
Kabisch, Gerhard; and Kunkel, Wolfgang, 3,743,706.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, 3,742,566.

Devlin, John O.; and Matievich, William, to Standard Pressed Steel Co. Method of using twist-off nut to assemble a joint. 3,742,583, Cl. 29-413.000.

DeWolf, Howard E. Corrugated panel structure having vertically oriented columnar shapes. 3,743,568, Cl. 161-68.000.

Di Russo, Ettore; Buratti, Massimo; and Conserva, Mario, to Societa per L'Esercizio Dell'Istituto Sperimentale Metalli Leggeri. Thermomechanical process for improving the toughness of the high strength aluminum alloys. 3,743,549, Cl. 148-127.000.

Diamond International Corporation: *See—*
Siciliano, Anthony J., 3,743,079.

Diamond, Lew H., to Otis Elevator Company. Self-adjusting proximity detecting apparatus. 3,743,058, Cl. 187-29.00r.

Diamond-Square Industries, Inc., mesne: *See—*
Vieth, George, Jr., 3,743,361.

Dickenson, Harvard G.; and Hoffman, Charles R. Top and bottom gate valve for removing and replacing renewable seating elements. 3,743,244, Cl. 251-197.000.

Dickey, Milton G., to Farmers Tractor and Equipment Company. Cultivator fender assembly. 3,743,031, Cl. 172-513.000.

Dickinson, Richard H., Jr.: *See—*
Courtot, Louis B.; and Dickinson, Richard H., Jr., 3,743,326.

Diehl, G., Mateer Co.: *See—*
Sauerbrey, Charles A., 3,743,140.

Dietrich, Heinz J.; and Steiger, Edward L., to Owens-Illinois, Inc. Preparation of liquid-crystal compounds. 3,743,681, Cl. 260-566.00f.

Digital Equipment Corporation: *See—*
Leis, Michael D.; and Gray, Robert C., 3,743,839.

Dilanni, Daniel: *See—*
Brackmann, Warren A.; and Dilanni, Daniel, 3,743,075.

Dillingham, Edward: *See—*
Pooley, Charles Kent; and Dillingham, Edward, 3,743,837.

Dillon, John N. Catamaran. 3,742,886, Cl. 114-61.000.

Diorio, Frank. Disc anchor. 3,742,891, Cl. 114-208.00r.

Dipace, George, 3 B & D Products, Inc. Fuse adapter. 3,744,003, Cl. 339-31.00b.

Dirne, Adrianus Petrus; and Raymakers, Adrianus Marinus, to U.S. Philips Corporation. Method of manufacturing a regenerator. 3,742,578, Cl. 29-419.000.

Dittman, Kenneth C.; and Skulpone, Sunthorn, to Electro-Corporation. Adjustable proximity sensor. 3,743,853, Cl. 307-116.000.

Dobashi, Itsuo: *See—*
Murayama, Masao; Seto, Eisuke; Okubo, Takashi; Morita, Iwao; and Dobashi, Itsuo, 3,743,666.

Dochnahl, Hans, to Draftex GmbH. Support for decorative moldings on door or window frames provided with rubber or plastic sealstrips. 3,742,649, Cl. 49-441.000.

Dochterman, Richard W., to General Electric Company. Dynamoelectric machines and assembly of same with a control device. 3,743,872, Cl. 310-90.000.

Dolezal, Richard, to Sulzer Brothers Limited. Steam power plant and method of operating the same. 3,742,709, Cl. 60-106.000.

Dolly Toy Co., The: *See—*
Holtvoigt, John H., 3,743,827.

Donahue, William J.; and Cammack, Thomas A., to United States of America, Navy. Fuze. 3,742,854, Cl. 102-7.400.

Doran, Wilbur R. Infinite gear ratio automatic drive transmission. 3,742,782, Cl. 74-688.000.

Dorfman, Walter: *See—*
Miller, Robert J.; and Dorfman, Walter, 3,743,275.

Dorn, Chester, to Superior Manufacturing Company. Pump base assembly. 3,743,448, Cl. 417-570.000.

Dosch, Peter; Oehmann, Manfred; and Benz, Emil. Speed control of electrical motors. 3,743,907, Cl. 318-271.000.

Douglas, Burke, to Dow Chemical Company, The. Method of making lined conduit joints. 3,742,590, Cl. 29-523.000.

Douglas, Livingston C., to Colgate-Palmolive Company. Carrier-dispenser package. 3,743,084, Cl. 206-42.000.

Douglas Machinery Co.: *See—*
Tamasi, Nick J., 3,744,046.

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Downer, John Douglas; Skinner, Ronald Maurice; Reed, David Robert; and Hope-Ross, Donald Patrick, to Texaco Trinidad, Inc. Single step sulfoxidation process. 3,743,673, Cl. 260-504.00r.

Downers, Grayson Hunter, Jr. Apparatus for securing sheathing to panel frames. 3,743,160, Cl. 227-100.000.

Drab, Edward A. Hanger clip for suspended ceilings. 3,743,228, Cl. 248-228.000.

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Crow, Morgan Le Von, 3,743,016.

Drew, Hilton H. Apparatus for mounting equipment on a roof. 3,742,659, Cl. 52-19.000.

Drexhage, Karl H.; and Mueller-Westerhoff, Ulrich T., to International Business Machines Corporation. Q-switching saturable absorber dye for a laser. 3,743,964, Cl. 331-94.500.

Drucker, Kenneth G., to Bio-Consultants, Inc. Centrifuge rotor head and sample holder assembly. 3,743,174, Cl. 233-26.000.

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Ducharme, Gerald Louis, to Eastman Kodak Company. Photographic product. 3,743,531, Cl. 117-76.00p.

Duff, Frank; and Simon, James Louis, to Bell Telephone Laboratories, Incorporated. Control arrangement for hands-free telephone operation. 3,743,791, Cl. 179-81.00b.

Duff, Frank; and Simon, James Louis, to Bell Telephone Laboratories, Incorporated. Message waiting lamp arrangement. 3,743,792, Cl. 179-84.00c.

Dugan, Kendrick W.; and Lish, Paul M., to Mead Johnson & Company. Process of treating peptic ulcer with a anticholinergic agent. 3,743,746, Cl. 424-330.000.

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Dupler, Raymond R. Hot water and hot air heating system. 3,742,929, Cl. 126-133.000.

Duskin, Fred E., to McDonnell Douglas Corporation. Panel blocking. 3,742,663, Cl. 52-145.000.

Dye, John F.; and Binard, William J., to Kendall Company, The, mesne. Deflatable retention catheter. 3,742,960, Cl. 128-349.0bv.

Dyksterhouse, Robert M. Terminal crimping apparatus. 3,742,564, Cl. 29-203.00d.

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Egli, Hermann; and Ulshofer, Hermann, to Sandoz Ltd. Process for reserving textiles of natural polyamide fibres and of synthetic fibres dyeable with acid dyes. 3,743,477, Cl. 8-66.000.

Ehm, Karl Horst, to Demag Aktiengesellschaft. Method and apparatus for producing an annular collar from a pipe in a hot state. 3,742,748, Cl. 72-166.000.

Eisenberg, Robert M., to Singer Company, The. Loran signal synthesizer. 3,743,754, Cl. 35-10.200.

Eisenstadt, Marvin E., to Cumberland Packing Corporation. Artificial sweetener composition. 3,743,518, Cl. 99-141.00a.

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Ellis, Ray G., to Atlas Tool & Manufacturing Company. Snow thrower. 3,742,626, Cl. 37-43.00r.

Ellis, William L. Holddown fastening clip with grating and sub-support structures. 3,742,671, Cl. 52-507.000.

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Enders, Sherwood G., to Black and Decker Manufacturing Company, The. Drill sharpener. 3,742,652, Cl. 51-73.00r.

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Engel, Joseph C.; and Elms, Robert T., to Westinghouse Electric Corporation. RMS sensing apparatus. 3,743,949, Cl. 328-144.000.

Engel, William K., to Caterpillar Tractor Company. Piston and retaining assemblies for a radial piston pump or motor. 3,742,818, Cl. 91-490.000.

Engelberger, Joseph F.; and Dunne, Maurice J., to Unimation, Inc. Stationary base programmed manipulator arrangement for continuously moving workpiece. 3,744,032, Cl. 340-172.500.

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English, Richard A., to Carrier Corporation. Absorption refrigeration system. 3,742,726, Cl. 62-476.000.

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Fa, Charles H., to North American Rockwell Corporation. Process for coplanar semiconductor structure. 3,743,552, Cl. 148-175.000.

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Famolare, Joseph P., Jr., to Famolare, Inc. Articulated clog. 3,742,625, Cl. 36o11.500.
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Fantuzzo, Joseph, to Xerox Corporation. Cutter assembly. 3,743,409, Cl. 355-13.000.
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Farrauto, Robert J.; and Haynes, William L., to Corning Glass Works. Hydraulic cements from glass powders. 3,743,525, Cl. 106-74.000.
Fast, Clarence R.; Wilder, Lawrence B.; and Veatch, Ralph W., Jr., to Amoco Production Company. Use of fluidic pressure fluctuation generator to stimulate underground formations. 3,743,017, Cl. 166-249.000.
Fathauer, George H., to Burrows Equipment Company. Moisture tester having temperature controlled variable time delay circuit. 3,743,930, Cl. 324-61.00r.
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Felser, Joseph, Jr. Bearing removal fixture. 3,742,570, Cl. 29-201.000.
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Festos, Nicholas G. Portable automotive spark voltage tester. 3,743,922, Cl. 324-19.000.
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Field, J. Paul. Apparatus and process for mixing chemicals. 3,743,598, Cl. 210-49.000.
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Fish, Austin D.; Fisher, William G.; and Brubaker, Robert F., to General Motors Corporation. Peripheral fill system for a clothes washer. 3,742,736, Cl. 68-23.500.
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Fixler, Jon S.; and Feldman, Leonard, to Industrial Patent Development Corporation. Relative amplitude separation detection gate. 3,743,947, Cl. 328-117.000.
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Fleckenstein, Andrew J.; and Mitchell, Herman C. Timing motor drive mechanism for water softener valves. 3,742,768, Cl. 74-3.520.
Fleer, Otto; and Heubeck, Erich, to Siemens Aktiengesellschaft. Holding and pulling device for dental instruments. 3,742,606, Cl. 32-22.000.
Fleissner, Heinz, to Vepa AG. Apparatus for the treatment of permeable material. 3,742,734, Cl. 68-5.00d.
Fleissner, Heinz, to Vepa AG. Device for the tension-free wet treatment of textile material lengths. 3,742,737, Cl. 68-177.000.
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Fletcher, Ralph A.; and Oliver, Joseph R., to Fletcher, H. E., Co. Reciprocating wedge structure including lubricant supply means. 3,743,357, Cl. 299-22.000.
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Flowers, Thoburn W. Golf putting green. 3,743,295, Cl. 273-178.00b.
Fluck, Rene, to Schweizerische Industrie-Gesellschaft. Stacking device for regularly shaped, flat articles, for examples biscuits or cookies. 3,743,118, Cl. 214-7.000.
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Forbes, Hampton E., Jr., to Westvaco Corporation. Carton with self locking cells. 3,743,168, Cl. 229-28.00r.
Ford, James A., to Kirsch Company. Plastic master with detachable baton. 3,743,002, Cl. 160-126.000.
Fordyce, Homer E. Circular mechanical draft cooling tower. 3,743,257, Cl. 261-112.000.
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Jaeger, Kurt S., 3,743,471.
Forster, Friedrich M. O. Magnetic flaw detector system for reciprocating pairs of leakage field detectors with means for adjusting the spacing between each pair of detectors. 3,743,928, Cl. 324-37.000.
Forster, Lloyd M. Bridge hand dealing system. 3,743,294, Cl. 273-149.00p.
Fortescue, Peter, to Energy & Enviromental Systems, Inc. Fuel element and venting system using same. 3,743,576, Cl. 176-37.000.
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Fosker, Alan Philip; and Mill, Patrick James, to Miles Laboratories, Inc. Dry water-dispersible aluminum hydroxide gels. 3,743,720, Cl. 424-88.000.
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Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,743,550.
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Fowlkes, Robert F., to Fowlkes Machine Company. Screw sorting machine. 3,743,091, Cl. 209-73.000.
Fraga, Donald W. Polymerization monitoring process. 3,743,629, Cl. 260-93.50s.
Franciscovich, John A., to Fibre-Weld, Inc. Method of subsurface burning of quantities of refuse material and a fuel mixture for use in the method. 3,743,486, Cl. 44-51.000.
Franco, Nicholas B.; and Robinson, Martin A., to Olin Corporation. Process for preparing organic isocyanates. 3,743,664, Cl. 260-453.0pc.
Francois, Edgar, to Uniroyal, Inc. Hinge fastener for conveyor belts. 3,742,557, Cl. 24-33.00b.
Frankl, George: *See—*
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Franssen, Nico Valentinus; Ruiterkamp, Willem; and Van der Pelt, Cornelis Johannes, to U.S. Philips Corporation. Method of producing tones of a preferably substantially, equal-tempered scale. 3,743,756, Cl. 84-1.010.
Franz, Ludwig, to Pfaff Industriemaschinen GmbH. Double chain stitch sewing machine having compound feeding means. 3,742,880, Cl. 112-199.000.
Fratzke, Lawrence F.: *See—*
Westervelt, Ralph; Fratzke, Lawrence F.; and Stump, Ronald C., 3,743,068.
Frazen, Berwin F. Collapsible shelter for mounting on a transportation vehicle. 3,742,966, Cl. 135-1.00a.
Frech, Anton. Transport system particularly upright cableway, aerial cableway or overhead railway. 3,742,864, Cl. 104-173.000.
Freedman, Gerald, to Freedman Seating Company. Vehicle seat suspension system with height and ride indicator. 3,743,230, Cl. 248-399.000.
Freedman Seating Company: *See—*
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Freeman, Charles D.: *See—*
Rhodes, Robert V.; and Freeman, Charles D., 3,743,284.
Freeman Supply Company, The: *See—*
Rusk, Gerald R.; and Koch, Robert E., 3,742,789.
Freese, Lennart Werner, to New-Invent S.A. Telescopic piston-cylinder assembly for hydraulic machines and machine components. 3,742,819, Cl. 91-490.000.
Frei, Joerg: *See—*
Baschang, Gerhard; Frei, Joerg; Morel, Charles; and Wacker, Oskar, 3,743,663.
Freitag, Werner F. J. Universal coupling device. 3,742,892, Cl. 114-235.00r.
Frezzo, Guido; and Piacentino, Thomas J., to Longwood Development Corporation. Apparatus for removing compost from mushroom trays. 3,743,117, Cl. 214-17.0da.
Fricker, Ludwig: *See—*
Oblander, Kurt; and Fricker, Ludwig, 3,742,923.
Fries, Carl J., Jr.; Leiter, Leigh D.; and Linda, Frank R., to International Paper Company. Automatic handle applying machine. 3,742,576, Cl. 29-211.00r.
Frink, Russell E.; and Kozlovic, John M., to Westinghouse Electric Corporation. Potential indicator for high voltage switchgear. 3,744,045, Cl. 340-248.00r.
Frischkorn, Hans; Pintschovius, Ulrich; and Behrenbruch, Horst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 1,4-Bis-[benzoxazolyl-(2')]-naphthalene derivatives. 3,743,625, Cl. 260-75.00n.
Fritz, Edward J.; and Middendorf, William H., to Wadsworth Electric Manufacturing Company, The. Closure means for unoccupied circuit breaker opening in a panel board. 3,743,892, Cl. 317-120.000.
Fritz, William Baird. Coated ferrite RF filters. 3,743,978, Cl. 333-79.000.
Froeschner, Kenneth E.: *See—*
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Frohman-Bentchkowsky, Dov, to Intel Corporation. Electrically programmable read only memory array. 3,744,036, Cl. 340-173.00r.
Frohock, Millard M., Jr.: *See—*
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Frohrib, Darrell A., to University of Minnesota, The Regents of the. Constant flexure stress energy storing beam. 3,742,800, Cl. 83-587.000.
Frost, Donald J., to Modine Manufacturing Company. Heat exchanger. 3,743,011, Cl. 165-38.000.
Frost, Horace K.: *See—*
Sellari, Daniele, Jr.; and Frost, Horace K., 3,743,950.
Frotriede, Charles J., to McGraw-Edison Company. Laundry handling system and equipment. 3,742,738, Cl. 68-210.000.
Frowein, Egbertus Adrianus, to N.V. COQ Utrecht. Metal clad electric distribution and switching plants for high voltages. 3,743,804, Cl. 200-148.00b.
Frye, Bernard, to Tenneco Chemicals, Inc. Polyurethane solutions and methods for the production of uniformlymmicroporous polyurethane sheet material therefrom. 3,743,620, Cl. 260-32.6nr.
Fugitt, Ronald Bruce, to United States of America, Navy. Polarized light source for underwater use. 3,743,380, Cl. 350-152.000.
Fuji Photo Film Co., Ltd.: *See—*
Honjo, Satoru; Takimoto, Masaaki; and Kasugai, Tsuneo, 3,743,537.
Nakazawa, Yoshiyuki; Tsuji, Nobuo; Sawahara, Masao; and Hinata, Nasanao, 3,743,510.
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Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Ooba, Shigehiro; Tanaka, Katsutoshi; Nodera, Katsuji; Ooishi, Tadashi; and Kameda, Nobuyuki, to Sumitomo Chemical Co., Ltd., mesne and Hokko-Chemical Industry Co., Ltd. N(3,5-Dihalogenophnyl)-oxazolidine compounds and preparation thereof. 3,743,651, Cl. 260-307.00c.
Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Nodera, Katsuji; Tanaka, Katsutoshi; and Ooishi, Tadashi, to Sumitomo-Chemical Company, Ltd. N-phenylmaleimide derivatives. 3,743,654, Cl. 260-326.5fm.
Fujisaki, Hiroya; Nagashima, Shigeo; and Iwasaki, Masahiro. Speech signal transmission systems utilizing a non-linear circuit in the base band channel. 3,743,787, Cl. 179-1.0sa.
Fukaya, Hiroyuki: *See—*
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Fukushima, Yoshikiyo; and Akagi, Tadashi, to Nippon Concrete Industries Co., Ltd. Method for shaping indented steel wire and apparatus therefor. 3,742,747, Cl. 72-68.000.
Fuller, Maurice D., to Korry Manufacturing Company. Releasable cartridge mounted servomechanism for an operating unit latched to a keeper device on the cartridge thereof. 3,743,806, Cl. 200-167.00a.
Furuhashi, Haruyoshi, to Daido Steel Co., Ltd. Method of suppressing hot spot in arc furnace and apparatus therefor. 3,743,752, Cl. 13-12.000.
Fussell, Richard H., to Burroughs Corporation. Sensitive threshold signal detector circuit. 3,743,857, Cl. 307-235.00r.
Gabano, Jean-Paul, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Preparation of electrodes containing metallic chlorides as active materials for use in electrochemical generators by chloridation. 3,743,546, Cl. 136-20.000.
Gabliks, Maigonis: *See—*
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Gage, Arthur F., to North American Rockwell Corporation. Friction welding brake system. 3,743,162, Cl. 228-2.000.
Gainous, Aubrey Cornelius: *See—*
Mayo, William Harold; Winters, Arthur Burnett; Davis, James Bradley, Jr.; Edenfield, Harrison; and Gainous, Aubrey Cornelius, 3,743,024.
Gale, James G., to Newco Manufacturing Company, Inc. Web corner protector. 3,743,341, Cl. 294-74.000.
Galey, Jean: *See—*
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Galley, Gerald Jack, to Sheffield Steel Products Limited. Wheelbraces. 3,742,790, Cl. 81-177.00e.
Gampe, Egon, to Rheinmetall GmbH. Apparatus for the production of hollow bodies of thermoplastic materials in a blowing process. 3,743,466, Cl. 425-326.000.
Ganguly, Achintya K.; Zemon, Stanley; and Zucker, Joseph, to GTE Laboratories Incorporated. Surface wave acoustic parametric amplifier. 3,743,953, Cl. 330-4.600.
Gans, Michael James; and Reudink, Douglas Otto John, to Bell Telephone Laboratories, Incorporated. Diversity receiver suitable for large scale integration. 3,743,941, Cl. 325-305.000.
Garabedian, Michele: *See—*
Deluca, Hector F.; Holick, Michael F.; and Garabedian, Michele, 3,743,661.
Garcea, Giampaolo, to Alfa Romeo S.p.A. Device for the timed injection of air into the exhaust ducts of an internal combustion engine. 3,742,712, Cl. 60-294.000.
Garceau, David S.; and Knoke, Silas J., to Lear Siegler, Inc. Height adjusting and locking assembly for cabinet mounted ironing table. 3,742,868, Cl. 108-39.000.
Garcia, Joe N., to Yoakum, Marshall. Jump suit. 3,742,518, Cl. 2-79.000.
Garrett Corporation, The: *See—*
Elkins, William; and Connele, Eugene W., 3,743,368.
Garrett, Hubert Leon. Exercising steps. 3,743,283, Cl. 272-70.000.
Gass, Edward W.; and Paramore, Fred W., to Halliburton Company. Variable frequency multiplier and phase shifter. 3,743,946, Cl. 328-110.000.
Gay, Michel J. L.: *See—*
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Geary, Carl H., to Carrier Corporation. Fluid operated turbine speed control. 3,743,434, Cl. 415-30.000.
Gebhardt, Rudolf; and Goppert, Max, to Krauss-Maffei Aktiengesellschaft. Floating electromagnetic suspension system. 3,742,862, Cl. 104-148.0ms.
Gebr. Bohler & Co., AG: *See—*
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Geering, Emil J.; and Stratton, George B., to Hooker Chemical Corporation. Phenols polysulfides and mercaptophenols. 3,743,680, Cl. 260-609.00d.
Gehrke, Gunter; Hederich, Volker; and Wegner, Peter, to Bayer Aktiengesellschaft. Continuous dyeing of synthetic fibers with water-immiscible organic solvents and amino hydroxy anthraquinones. 3,743,476, Cl. 8-39.000.
Geirhos, Werner; and Eggermont, Frans, to Grosse Webereimaschinen GmbH. Method of and apparatus for preparing a program for a textile machine. 3,744,035, Cl. 340-172.500.
Geleziunas, Rimas J., to CEB Limited. Circuit breaker. 3,743,981, Cl. 335-23.000.
Gelinas, Yvan. Transmission and steering systems for vehicles provided with non-steerable wheels. 3,743,043, Cl. 180-6.200.
Gelis, Christian, to Commissariat a l'Energie Atomique. Macroaggregates of copper-64 and gelatin, application and method of preparation of same. 3,743,712, Cl. 424-1.000.
Gemco Electric Company: *See—*
Cork, Gordon H.; and Tenniswood, David M., 3,743,799.
General Datacomm Industries: *See—*
Davis, Steven Jay, 3,743,938.
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General Electric Company: *See—*
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General Kinematics Corporation: *See—*
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Genevey, Pierre. Cryostatic container. 3,743,759, Cl. 174-15.00r.
Genuit, Luther L.; and White, Robert B., to Honeywell Information Systems Inc. Dual voltage regulator. 3,743,924, Cl. 323-22.00t.
George, D'Arcy R.; and Ross, John R., to United States of America, Interior. Uranium recovery. 3,743,695, Cl. 423-8.000.
George, Percy F., to Dow Chemical Company, The. Consumable magnesium anode with a tin-coated, ferrous metal core wire. 3,742,588, Cl. 29-458.000.
Gerard, James G.: *See—*
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Giallorenzi, Thomas G., to United States of America, Navy. High power beam combiner. 3,743,383, Cl. 350-170.000.
Giambazi, James D. Ski pole basket. 3,743,311, Cl. 280-11.37z.
Giani, Aleardo, to Honeywell Information Systems Italia S.p.A. Control system for high-speed printing machines. 3,742,845, Cl. 101-93.00c.
Gibbons, Gregory J., to Lee, Raymond, Organization, Inc., The. Combined wheel barrow and hand truck. 3,743,312, Cl. 280-47.180.
Gibbons, James H. Mold cavity locking apparatus. 3,743,469, Cl. 425-450.000.
Gibson, Daniel L.: *See—*
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Giessler, Horst; Lorenz, Klaus; Brutschin, Gerhard; and Walti, Marc, to Rene Blaser, Hebe-und Maschinenbau, Firma and Translift Gesellschaft fur Hebe-und Forderanlagen m.b.H. Central conveying system. 3,743,116, Cl. 214-16.40r.
Gifford, Henry A. Mechanical pile driving hammer. 3,743,030, Cl. 173-124.000.
Gill, Raymond E.; and McMahon, Floyd J., to Westinghouse Air Brake Company. Position sensing apparatus. 3,743,026, Cl. 172-4.500.
Gilman, Clarence R., to United States of America, Interior. Photomechanical method. 3,743,415, Cl. 355-52.000.
Gimbel, William T. Play slide. 3,743,281, Cl. 272-56.50r.
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Glaser, Hermann: *See—*
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Glass, Henry G., to Lilly, Eli and Company. Storage housing for cases with hinged covers. 3,743,374, Cl. 312-319.000.
Glass, Marvin I.; Morrison, Howard J.; and Nix, Donald F., to Stainless, Inc. Remotely powered toy set. 3,742,875, Cl. 46-243.0lv.
Glassner, Harvey F.: *See—*
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Godbersen, Byron L. Implement attachment. 3,743,269, Cl. 267-164.000.
Goerlich, Bruno; Kubinyi, Hugo; and Steidle, Walter, to Knoll A.G. Chemische Fabriken. $\Delta^{4,20,22}$-Bufatrienolide rhamnoside acylates and methods for their preparation. 3,743,633, Cl. 260-210.500.
Goff, Earl: *See—*
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Goldman, Martin; and Merrill, Stewart H., to Eastman Kodak Company. Electro-photographic process using a liquid developer containing a polymeric dye. 3,743,503, Cl. 96-1.000.
Golomb, David L., to Everlast World Boxing Headquarters Corporation. Baseball base and fastener therefor. 3,743,289, Cl. 273-25.000.
Goltermann, Wandel u.: *See—*
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Gonthier, Beatrice: *See—*
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Goodman, Robert; and Kilpatrick, David G. Adjustable hospital beds. 3,743,905, Cl. 318-227.000.
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Goodyear Aerospace Corporation: *See—*
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Gordon, Phillip B., Jr.; and Whitehurst, Gerald Edward, to Caterpillar Tractor Company. Timing mechanism for engines. 3,742,925, Cl. 123-139.0aq.
Gorges, Friedrich J., to Boeing Company, The. High lift leading edge device. 3,743,219, Cl. 244-42.0ca.
Goshi, Seiji: *See—*
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Gottlieb, Arnold J.; and Majesko, George A., to Wilbur B. Driver Company. Bimetal capable of deformation. 3,743,485, Cl. 29-195.500.
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Grace, Martin I.; and Pratt, Harold J., Jr., to Sperry Rand Corporation. Trapatt diode transmission line oscillator using time delayed triggering. 3,743,966, Cl. 331-101.000.

Grace, W. R., & Co.: *See—*
Peterson, John B., 3,743,104.
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Graf, Max E.; Roth, Helmut; and Von Fahland, Jurgen W., to Badische Maschinenfabrik GmbH. Control system for the circulatory system of a shot blasting apparatus. 3,742,650, Cl. 51-5.000.

Grainger, Frederick: *See—*
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Graphic Arts Center: *See—*
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Gray, John McCutcheon; Pionke, Jerzy; and Johnson, Edwin, to Pilkington Brothers Limited. Apparatus for scoring sheet material. 3,742,793, Cl. 83-8.000.

Gray, Robert C.: *See—*
Leis, Michael D.; and Gray, Robert C., 3,743,839.

Graybill, Wilbur H. Harvesting machine. 3,742,691, Cl. 56-259.000.

Grayson, Richard Davis, to International Telephone and Telegraph Corporation. Oven with automatic cook and keep warm mode selection. 3,743,179, Cl. 236-15.00a.

Great Lakes Sports Mfg. Co.: *See—*
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Green, Eugene D., to General Dynamics Corporation. Apparatus for diffusion molding. 3,743,455, Cl. 425-78.000.

Green, Franklin H. Toy bank. 3,742,641, Cl. 46-4.000.

Green, Rosemary. Protection of metallic surfaces. 3,743,547, Cl. 148-6.270.

Greenlaw, Albert H., to United States of America, Navy. SUS cable trolley. 3,744,014, Cl. 340-3.00t.

Greenough, Roger W.: *See—*
Newman, Howard S.; and Greenough, Roger W., 3,743,932.

Greenspan, Donald J., to U.S. Medical Research and Development Incorporated. Medical office facility with two or more examining rooms having a common equipment core area. 3,742,932, Cl. 128-1.00r.

Greeves, Thomas William, to Cadbury Limited. Mechanism for correcting any tendency for a moving web to deviate from a required path. 3,743,152, Cl. 226-19.000.

Greiner, Harry M.; and Banfer, Hartwig, to Roland Offset-maschinenfabriken Faber & Schleicher AG. Coupling arrangement for perfecting lithograph press unit. 3,742,849, Cl. 101-220.000.

Greive, Aloys; and Treus, Aloys, to Hamel GmbH. Yarn-twisting apparatus for formation of multiple-ply thread. 3,742,693, Cl. 57-58.860.

Grier, Herbert E.: *See—*
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Gries, Richard J., to Owens-Illinois, Inc. Corrugated sheet cutoff length adjustment apparatus. 3,742,798, Cl. 83-298.000.

Grise, Frederick G. J. Pipe freezing device. 3,742,723, Cl. 62-293.000.

Grohmann, Klaus: *See—*
Stohr, Christian; Grohmann, Klaus; and Wagner, Siegbert O., 3,743,557.

Groothaert, Henry Edmond, to Servus Rubber Company, The. Boot with heel protection. 3,742,623, Cl. 36-4.000.

Groppl, Arthur D. Glass cutting table. 3,743,149, Cl. 225-2.000.

Grosjean, Pierre; and Vaginay, Yves, to Societe Rhodiaceta. Antistatic thermoplastic polyester composition containing sulfonated polyoxyalkylene. 3,743,685, Cl. 260-860.000.

Gross, Jerome A. Valve and membrane apparatus for recapping tire casings. 3,743,564, Cl. 156-394.000.

Gross, Robert I., to Pall Corporation. Flow-sensitive sensing and shut-off device. 3,742,970, Cl. 137-100.000.

Grosse Webereimaschinen GmbH: *See—*
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Grosskinsky, Otto-Alfred; and Merkel, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous manufacture of bis (aminocyclohexyl)-alkanes or bis(aminocyclohexyl) ethers. 3,743,677, Cl. 260-563.00d.

Grossman, Charles M. Apparatus for the in vivo treatment of blood containing harmful components resulting from chronic uremia and other conditions. 3,742,946, Cl. 128-214.00r.

Grosvenor, Herbert Don: *See—*
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Grote Manufacturing Company, Inc., The: *See—*
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Grote, Walter F., Sr.; and Kimmel, Edward J., Sr., to Grote Manufacturing Company, Inc., The. Vehicle spray control means. 3,743,343, Cl. 296-1.300.

Grothe, Horst: *See—*
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Growth International, Inc.: *See—*
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Gruppo Lepetit S.p.A.: *See—*
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GTE Automatic Electric Laboratories Incorporated: *See—*
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GTE Laboratories Incorporated: *See—*
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GTE Sylvania Incorporated: *See—*
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Guddal, Erling: *See—*
Borrevang, Poul; and Guddal, Erling, 3,743,660.

Guerster, Rene L.; and Leiter, Leigh David, to Ametek Inc. Energy absorbing device. 3,743,267, Cl. 287-74.000.

Guest, Rex McLean. Boat launching and beaching device. 3,742,534, Cl. 9-1.00t.

Guest, William H. Asphalt cutting attachment for backhoe bucket. 3,743,358, Cl. 299-40.000.

Guinan, Thomas, to Heinemann Electric Company. Lighted actuator assembly. 3,743,805, Cl. 200-167.00a.

Gulf Research & Development Company: *See—*
Dahle, Norman A., 3,743,650.

Gulikers, Josef Hubertus, to N.V. Koninklijke Sphinx-Ceramique v/h Petrus Regout. Apparatus for simultaneously decorating both sides of a three dimensional article. 3,742,843, Cl. 101-41.000.

Gumpper, John C.; and De Laurentis, Angelo A., to Westinghouse Electric Corporation. Magnetic core structures. 3,743,991, Cl. 336-217.000.

Gusack, James A.: *See—*
Duby, Russell G.; Evans, Robert E.; and Gusack, James A., 3,743,559.

Gusdorf & Sons, Inc.: *See—*
Gusdorf, Walter; and Camilleri, Charles Francis, 3,742,870.

Gusdorf, Walter; and Camilleri, Charles Francis, to Gusdorf & Sons, Inc. Article of furniture. 3,742,870, Cl. 108-150.000.

Gutman, Arnold D., to Stauffer Chemical Company. Dithiocarbamylacetoneoxime carbamate acaricides and insecticides. 3,743,743, Cl. 424-300.000.

Gutshall, Charles E., to Elco Industries, Inc. Teeter terminal clamp. 3,744,012, Cl. 339-246.000.

Haamann, Josef, Freudenberger Winden- und Hebezeugfabrik: *See—*
Wenzel, Jorg; and Rieschel, Hans, 3,742,817.

Haas, Gerhard J., to General Foods Corporation. Acid stabilization of meat based foods. 3,743,519, Cl. 99-159.000.

Haas, Paul A.: *See—*
Ferguson, Don E.; Haas, Paul A.; and Leuze, Rex E., 3,742,720.

Haberle, Karl-Heinz: *See—*
Wisst, Otto; and Haberle, Karl-Heinz, 3,742,827.

Hablitzel, Hermann: *See—*
Schwenk, Kurt; and Hablitzel, Hermann, 3,743,236.

Habu, Teiji; Yoshida, Kyusaku; Hirao, Yotaro; and Takahashi, Kazuo, to Antistatic composition. . 3,743,608, Cl. 252-500.000.

Haby, George H., to Abegg and Reinhold Co. Well pipe supporting unit. 3,742,562, Cl. 24-263.0dk.

Hadaway, Bernare Milton, to Commonwealth Scientific and Industrial Research Organization. Yarn spinning apparatus. 3,742,696, Cl. 57-51.600.

Hadco Printed Circuits, Inc.: *See—*
Davis, Dana L., 3,742,597.

Hagedorn, Alton R.: *See—*
Blackwell, Robert J.; Hagedorn, Alton R.; and Ortloff, Gerald D., 3,743,355.

Hahlbeck, Edwin C., to Milwaukee Gear Company. Apparatus for positioning a gear. 3,742,568, Cl. 29-200.00p.

Hait, Merritt R.: *See—*
Battista, Orlando A.; Cruz, Mamerto M., Jr.; and Hait, Merritt R., 3,742,955.

Hajek, Manfred: *See—*
Wagner, Kuno; and Hajek, Manfred, 3,743,667.

Halasz, Alexander, to Clairol Incorporated. Hair dyeing compositions. 3,743,678, Cl. 260-573.000.

Halcon International Inc.: *See—*
Kollar, John, 3,743,672.

Halfaker, Thomas C., to Emerson Electric Co. Ceiling modules. 3,743,826, Cl. 240-9.00a.

Hall, Donivan L.; Lauer, Robert J.; and Robazskiewicz, Gerald D., to Reliance Electric Company. Elevator recall control with interfloor traffic control. 3,743,057, Cl. 187-29.00r.

Hall, Edward L.; and Philofsky, Elliott M., to Motorola, Inc. Electromigration resistant semiconductor contacts and the method of producing same. 3,743,894, Cl. 317-234.00r.

Hallauer, Siegfried; Mathys, Gaston; and Wenk, Hans, to Ornapress AG. Apparatus for injection molding articles carrying decorations punched from a band. 3,743,458, Cl. 425-122.000.

Halliburton Company: *See—*
Copland, George V., 3,743,768.
Gass, Edward W.; and Paramore, Fred W., 3,743,946.
Jessup, Robert L., 3,743,014.
Totty, Kenneth D., 3,743,019.

Halstead, Richard J., to General Electric Company. High voltage rectifier holder. 3,743,761, Cl. 174-52.00r.

Hamada, Masa: *See—*
Umezawa, Hamao; Kondo, Shinichi; Maeda, Kenji; Takeuchi, Tomio; and Hamada, Masa, 3,743,580.

Hamai, Tetsuro, to Kabushiki Kaisha Suwa Seikosha. Driving arrangement for an electric watch. 3,742,697, Cl. 58-23.00a.

Hamaoka, Hidenori: *See—*
Muroi, Tadashi; Oguri, Yoshitaka; and Hamaoka, Hidenori, 3,743,611.

Hamby Company, The: *See—*
Mills, Franky D., 3,743,029.

Hamel GmbH: *See—*
Greive, Aloys; and Treus, Aloys, 3,742,693.

Hamilton, Donald W.: *See—*
Beroza, Morton; McGovern, Terrence P.; Schwartz, Paul H., Jr.; and Hamilton, Donald W., 3,743,719.

Hamisch, Paul H., Sr., to Monarch Marking Systems, Inc. Web feeding apparatus. 3,742,851, Cl. 101-295.000.

Hammann, Ingeborg: *See*—
Schrader, Gerhard; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,743,687.

Hammerschmidt & Co.: *See*—
Mansfeld, Hans, 3,742,669.

Hammitt, Andrew G., to TRW Inc. Variable speed conveyor. 3,743,077, Cl. 198-110.000.

Hammontre, Michael P.: *See*—
Comley, William, Jr.; and Hammontre, Michael P., 3,743,952.

Hampton, Edward L.: *See*—
Crum, McDonald; and Hampton, Edward L., 3,743,349.

Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, to Microform Data Systems, Inc. Film strip handling apparatus and method. 3,743,400, Cl. 353-26.000.

Hannes, Karl, to Coats & Clark, Inc. Cast hinge. 3,742,555, Cl. 16-128.000.

Hansen, Francis Frederick. Monoglyceride product and method of preparing the same. 3,743,512, Cl. 99-91.000.

Hansen, Kenneth N., to Allis-Chalmers Corporation. Engine hood latch. 3,743,045, Cl. 180-69.00r.

Hanus, Hans-Dieter; and Aussenegg, Franz, to Vianova-Kunstharz A.G. Process for hardening coatings with lasers emitting infra-red radiation. 3,743,777, Cl. 219-121.0lm.

Harbonn, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Device for the storage and use of hydraulic and/or pneumatic power, particularly for operation of submerged well heads. 3,743,013, Cl. 166-.500.

Harco Electronics Ltd.: *See*—
Kleinberg, Israel, 3,742,594.

Hardick, Alden; Martin, Alvin M.; and House, Delbert, to Questor Corporation. Latch installation machine. 3,742,575, Cl. 29-208.00f.

Harlin, Lester E.: *See*—
Abendschein, Frederic H.; Harlin, Lester E.; and Mount, Alfred G., 3,743,453.

Harmon, Kermit S.; and Loosley, Donal W. Temperature sensitive controls for air conditioning systems. 3,743,182, Cl. 236-78.000.

Harnden, John D., Jr., to General Electric Company. Hybrid circuit arrangement with metal oxide varistor shunt. 3,743,897, Cl. 317-235.00r.

Harnden, John D., Jr., to General Electric Company. Protective pads for electrical devices. 3,743,996, Cl. 338-21.000.

Harris, Charles J. Laterally expandable couch. 3,743,351, Cl. 297-107.000.

Harris, J. L., to United States of America, Army. Switching system and method for missile guidance control in a TVM system. 3,743,215, Cl. 244-3.140.

Harris, John Frederick George, to Laporte Chemicals Limited. Solid blends of peroxy compounds and phosphate containing detergent bases. 3,743,600, Cl. 252-95.000.

Harris-Intertype Corporation: *See*—
Shapiro, Eliezer Y., 3,742,825.

Harter, Robert M., to AVM Corporation. Valve assembly having integral body and inlet. 3,742,983, Cl. 137-625.470.

Harting, Stephen W.: *See*—
Sanders, Ray W.; and Harting, Stephen W., 3,744,051.

Hartmann, Werner; Barnikol-Oettler, Kurt; and Teichmuller, Gerhard, to Veb Jenapharm. Trialkylsilyloximo steroids. 3,743,636, Cl. 260-239.55r.

Harvey, Galen E., Jr.; and Petty, Gary C. Filter adapter. 3,743,096, Cl. 210-232.000.

Hasala, Ernest. Illuminated displays. 3,742,631, Cl. 40-106.530.

Haselhuhn, Rolf: *See*—
Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, 3,743,007.

Hashimoto, Tadashi: *See*—
Miura, Taro; Nakamura, Kiichi; and Hashimoto, Tadashi, 3,743,972.

Haspem, James F., to American Optical Corporation. Optically isolated electro-medical device. 3,742,947, Cl. 128-2.06r.

Hasselbald, Fritz Victor: *See*—
Johansson, Lennart Ragnar; and Tenne, Lave, 3,742,829.

Hatch Incorporated: *See*—
Lopez-Batiz, Manlio, 3,743,889.

Hatfield, Cecil T. Device for cultivating around a fixed object. 3,743,027, Cl. 172-13.000.

Hawkins, Roy: *See*—
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,743,185.

Hawkins, William E., to Du Pont de Nemours, E. I., and Company. Method of and apparatus for handling material. 3,743,197, Cl. 242-56.600.

Hawley, John B., to Akron Spool and Manufacturing Co. Spool. 3,743,210, Cl. 242-125.100.

Hayes, John R.; and Collins, George E., to General Motors Corporation. Stiff back roller chain device. 3,742,775, Cl. 74-245.00r.

Haynes, William L.: *See*—
Farrauto, Robert J.; and Haynes, William L., 3,743,525.

Heavner, Larry W., to Coronet Container Corporation. Unitary pallet pack container. 3,743,166, Cl. 229-23.00r.

Heckrotte, John R., Sr.; and Marcacci, James P. Lock-off valve. 3,743,239, Cl. 251-111.000.

Hederich, Volker: *See*—
Gehrke, Gunter; Hederich, Volker; and Wegner, Peter, 3,743,476.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Apparatus for providing an analog output in response to a digital input. 3,744,050, Cl. 340-347.0da.

Heemaf N.V.: *See*—
De Jong, Henricus Cornelis Johannes, 3,743,873.

Heesen, Theodorus Jacobus, to Simon-Heesen N.V. Roller press. 3,742,750, Cl. 72-238.000.

Heflinger, Lee O., to TRW Inc. Contour mapping system. 3,743,418, Cl. 356-5.000.

Heiland, Manfred; and Huenlinger, Herwig, to Schenck, Carl, Maschinenfabrik GmbH, Firma. Vibration apparatus especially for rotary oscillations. 3,743,268, Cl. 267-160.000.

Hein, Daniel: *See*—
De Lavalette, Pierre de Lacroix; and Hein, Daniel, 3,743,066.

Heine, Martin W.; and Tullman, Edward J., to Singer Company, The. Stitch length regulator. 3,742,881, Cl. 112-210.000.

Heinemann Electric Company: *See*—
Guinan, Thomas, 3,743,805.

Heinimann, Rene: *See*—
Roesch, Carol; and Heinimann, Rene, 3,743,803.

Heinz, Robert Alfred; and Watkins, Laurence Shrapnell, to Western Electric Company, Incorporated. Intensity spatial filter having uniformly space filter elements. 3,743,423, Cl. 356-71.000.

Heinze, Peter: *See*—
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; Pommer, Ernst Heinrich; and Mohr, Rudolf, 3,743,642.

Heitkamp, Richard R.: *See*—
Koontz, Robert D.; Heitkamp, Richard R.; and Jackson, Robert E., 3,743,561.

Heller, Aaron. Educational device. 3,742,616, Cl. 35-8.00r.

Heller, Kenneth G., to Walworth Company. Fabricated round gate valve body. 3,743,246, Cl. 251-367.000.

Helm, Arlow D.: *See*—
Louthan, Jean H.; Helm, Arlow D.; and Wynne, Ralph A., 3,743,566.

Helmrich, Gunter; and Wulfing, Fritz, to Vereinigte Aluminium-Werke Aktiengesellschaft. Apparatus for making shaped bodies. 3,743,468, Cl. 425-429.000.

Helms, Charles Robert, to Container Corporation of America. Divider partitions for article carriers. 3,743,163, Cl. 229-15.00r.

Helsley, Grover Cleveland, to Robins, A. H., Company, Incorporated. 1-Substituted-4-phenoxypiperidines. 3,743,645, Cl. 260-293.740.

Hemme, William R., to Collins Radio Company. VOR AM modulator. 3,743,971, Cl. 332-38.000.

Hendrickson, Paul G., to Kelsey-Hayes Company. Servo action parking brake with rotary actuator. 3,743,060, Cl. 188-72.200.

Hengeller, Carlo; Lancini, Giancarlo; and Sensi, Piero, to Gruppo Lepetit S.p.A. 27-Demethoxy-27-hydroxyrifamycin derivatives. 3,743,635, Cl. 260-239.30p.

Henkin, Robert I. Diagnostic device and method of treatment. 3,743,088, Cl. 206-12.000.

Hennelly, Robert, to Caterpillar Tractor Company. Spray treatment for flame cutting installation. 3,743,259, Cl. 266-23.00k.

Henry, David A.; and Larimer, Myron J. Modular building construction. 3,742,665, Cl. 52-284.000.

Herberger, Robert J.: *See*—
Butler, Ernest J.; Gade, John N.; and Herberger, Robert J., 3,742,586.

Hercules Incorporated: *See*—
Mellow, Dale F., 3,743,554.

Herglotz, Heribert K., to Du Pont de Nemours, E. I., and Company. Method of dual wavelength X-ray analysis. 3,743,841, Cl. 250-273.000.

Herrmann, Nancy I. Dispensing container. 3,743,082, Cl. 206-1.00r.

Herschler, Robert John, to Crown Zellerbach Corporation. Enhancing tissue penetration of certain antimicrobial agents with dimethyl sulfoxide. 3,743,727, Cl. 424-181.000.

Hertel, Heinz E., to Bell & Howell Company. Core microfilm. 3,743,204, Cl. 242-68.500.

Hesston Corporation: *See*—
Bedwell, Thomas Albert, 3,743,023.

Heston, Russell G., Jr., to Deskey, Donald, mesne. Plateless printing device. 3,742,902, Cl. 118-50.000.

Hetke, Adolf: *See*—
Zeek, Richard M.; and Hetke, Adolf, 3,743,008.

Heubeck, Erich: *See*—
Fleer, Otto; and Heubeck, Erich, 3,742,606.

Hewlett-Packard Company: *See*—
Cutler, Leouard S.; and Lacey, Richard F., 3,744,042.
Miller, John H., III, 3,743,794.

Hey, Ernest, to Sherry, Helen B. Process of preparing fine-grained blends of lead with copper or aluminum. 3,743,502, Cl. 75-135.000.

Heydenreich, Richard; Marwitz, Hans-Gunther V. D.; and Blechschmidt, Hubert, to Bayerische Motoren Werke Aktiengesellschaft. Drum brake for vehicles. 3,743,063, Cl. 188-218.00r.

Hibbs, Louis E., Jr.: *See*—
Darrow, Kenneth A.; and Hibbs, Louis E., Jr., 3,742,654.

Hickman, Henry E., to Orsi, Ernest; d/b/a Orco Products. Magnetic lock. 3,742,739, Cl. 70-38.00b.

Hickner, Richard A.; and Bredeweg, Corwin J., to Dow Chemical Company, The. Thioether derivatives of 1-halo-3-mercapto-2-propanol. 3,743,679, Cl. 260-609.00r.

Hicks, Harris Vernon, to Lucas, Joseph, (Industries) Limited. Road vehicle lighting systems. 3,743,885, Cl. 315-82.000.

Higashinakagawa, Iwao; Nakagawa, Takashi; Ogawa, Takenobu; Takeno, Syozo; and Yasuda, Nobuaki, to Tokyo Shibaura Electric Co., Ltd. Magnetic thin film memory elements and method of manufacturing the same. 3,744,041, Cl. 340-174.0bc.

Higuchi, Ryoichi: *See—*
Watanabe, Toshio; Higuchi, Ryoichi; Yamato, Akihiro; and Sakai, Kazuo, 3,743,657.

Hilbert, Francis H.; and Seymour, Arthur F., to Motorola, Inc. Transistorized electronic circuit employing resistorless bias network. 3,743,863, Cl. 307-296.000.

Hill, Charles O.; and Pence, Elbert A., to United States of America, Navy. Passive sonar array mounting and recovery apparatus. 3,742,540, Cl. 9-400.000.

Hill, Clifford W. Syringe assembly. 3,742,949, Cl. 128-218.0pa.

Hillman, Melville E. D.; and Baylis, Anthony B., to Celanese Corporation. Reaction of acrylic type compounds with aldehydes and certain ketones. 3,743,669, Cl. 260-465.600.

Hilsley, Royston William, to Marconi Company Limited, The. Tee connection circuit for PCM telephone transmission systems. 3,743,790, Cl. 179-18.0bc.

Hilterhaus, Karl. Gaff-scale. 3,743,042, Cl. 177-233.000.

Hilti Aktiengesellschaft: *See—*
Ritter, Adolf; and Walser, Karl, 3,742,591.

Hinai, Masakatsu: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,743,550.

Hinata, Nasanao: *See—*
Nakazawa, Yoshiyuki; Tsuji, Nobuo; Sawahara, Masao; and Hinata, Nasanao, 3,743,510.

Hinze, Julius U.: *See—*
Feenstra, Robijn; and Hinze, Julius U., 3,743,036.

Hirai, Toshio: *See—*
Yajima, Seishi; Hirai, Toshio; Ishikawa, Toshikatsu; and Masuyama, Toshio, 3,744,000.

Hirano, Seiji: *See—*
Ando, Kunio; Oishi, Hideo; Sagawa, Takao; and Hirano, Seiji, 3,743,724.

Hirao, Yotaro: *See—*
Habu, Teiji; Yoshida, Kyusaku; Hirao, Yotaro; and Takahashi, Kazuo, 3,743,608.

Hirata, Masao; Tarumi, Noriyoshi; and Sato, Masayuki, to Konishiroku Photo Industry Co., Ltd. Process for producing photoconductive materials. 3,743,609, Cl. 252-501.000.

Hiratsuka, Ken-Ichi; Kawakami, Daizo; Kaneko, Haruo; and Takahashi, Suyoshi, 50% to Nippon Telegraph & Telephone Public Corporation and 50% to Nippon Electric Company Limited. Signal level supervising system for a pulse code modulation communication system 3,743,786, Cl. 179-15.0bp.

Hisatomi, Takashi; and Sasaki, Kenichi, to Nissan Motor Company, Limited. Multi carburetor system of variable area venturi type with auxiliary fuel supply system. 3,742,922, Cl. 123-97.00b.

Hitachi Chemical Company, Ltd.: *See—*
Muroi, Tadashi; Oguri, Yoshitaka; and Hamaoka, Hidenori, 3,743,611.

Hitachi, Ltd.: *See—*
Inagaki, Kiyokazu; Kato, Hidemasa; and Inoue, Kiyoshi, 3,743,575.
Muroi, Tadashi; Oguri, Yoshitaka; and Hamaoka, Hidenori, 3,743,611.
Nishida, Sumio, 3,742,598.
Suda, Seiji, 3,742,919.

Hiya, Koji: *See—*
Nishimura, Muneo; Machida, Kanji; and Hiya, Koji, 3,743,985.

HMW Industries, Inc.: *See—*
Bergey, John M., 3,742,699.

Hodge, Peter Charles; and Frankl, George, to Simms Group Research and Development Limited. Braking apparatus. 3,743,363, Cl. 303-21.00f.

Hoelscher, William R.; and Vildibill, Alvin J., to United States Elevator Corporation. Electronic motion control system for elevators. 3,743,055, Cl. 187-29.00r.

Hofer, Arnold: *See—*
Steffen, Jurg; and Hofer, Arnold, 3,742,907.

Hoff, Dale R.; and Fisher, Michael H., to Merck & Co., Inc. Substituted benzimidazoles as anthelmintic agents. 3,743,738, Cl. 424-270.000.

Hoffman, Charles R.: *See—*
Dickenson, Harvard G.; and Hoffman, Charles R., 3,743,244.

Hoffman, Clifford James, to Bell Telephone Laboratories, Incorporated. Stroke coded keyboard switch assembly. 3,743,797, Cl. 200-1.00r.

Hoffmann, Hellmut; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Combating fungi with chloroalkylthiol phosphoric acid esters and ester amides. 3,743,729, Cl. 424-225.000.

Hoffsommer, Walter A.; and Bartnicki, Wieslaw J., to Enterprise Machine and Development Corporation. Speed and tension control for yarn winder. 3,743,202, Cl. 242-45.000.

Hohenschutz, Heinz; Hornberger, Paul; and Buelow, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Removing nickel carbonyl from crude propionic acid. 3,743,674, Cl. 260-540.000.

Hokko-Chemical Industry Co., Ltd.: *See—*
Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Ooba, Shigehiro; Tanaka, Katsutoshi; Nodera, Katsuji; Ooishi, Tadashi; and Kameda, Nobuyuki, 3,743,651.

Holbrook, Legrand K.; and Ostler, David S., to Medical Development Corporation. Body fluid collection bottle for pediatric use. 3,742,934, Cl. 128-2.00f.

Holden, Calvin B., to PPG Industries, Inc. Method for increasing life of plasma arc electrodes. 3,743,781, Cl. 219-383.000.

Holick, Michael F.: *See—*
Deluca, Hector F.; Holick, Michael F.; and Garabedian, Michele, 3,743,661.

Holiday Vehicle Specialties, Inc.: *See—*
Clark, Arthur C., 3,743,320.

Holland, William P.; and Bavor, Gordon F., to Machlett Laboratories, Incorporated, The. X-ray focal spot control system. 3,743,836, Cl. 250-99.000.

Holliday, John Bertram: *See—*
Andrews, Edward George David; Ward, Robert George; Holliday, John Bertram; and Hurst, James, 3,742,707.

Holman, Benedictus Timotheus Johannes, to U.S. Philips Corporation. Focussing and deflecting system comprising a ferromagnetic wire-coil. 3,743,983, Cl. 335-210.000.

Holmes, Alton B., to North American Rockwell Corporation. Valve. 3,743,364, Cl. 303-54.000.

Holpe Kabushiki Kaisha: *See—*
Sasaki, Rokoru; and Miya, Toshio, 3,743,309.

Holstein & Kappert Maschinenfabrik "Phonix" GmbH: *See—*
Mnilk, Reinhold; Keil, Manfred; and Finger, Karl-Heinz, 3,743,141.

Holt, Albert C.: *See—*
Wilkins, Mark L.; Holt, Albert C.; Cline, Carl F.; and Froeschner, Kenneth E., 3,743,569.

Holtvoigt, John H., to Dolly Toy Co., The. Decorative lamp. 3,743,827, Cl. 240-10.00r.

Holz, Emil, to Finckh, Hermann, Metalltuch-und Maschinenfabrik. Sorting pressure filter apparatus. 3,743,099, Cl. 210-333.000.

Holz, George E., to Burroughs Corporation. Half wave voltage divider. 3,743,914, Cl. 320-1.000.

Hommerin, Michel, to Compagnie Generale de Radiologie. Magazine for bare film sheets for use in X-ray film handling. 3,743,200, Cl. 242-67.30r.

Homogeneous Metals, Inc.: *See—*
Wentzell, Joseph M., 3,742,585.

Honegger, Arthur; Schrepfer, Willy E.; and Kronfeld, Alan C., to Nortronics Company, Inc. Magnetic head construction. 3,744,040, Cl. 340-174.10f.

Honeywell Inc.: *See—*
Bolmgren, Lester N., 3,743,861.
Merz, William C.; Methlie, George J.; and Sattler, Rolf W., 3,743,545.
Nicholas, Merle E., 3,743,589.
Schebalin, Sergei, 3,743,997.
Scott, Myrsyl Walter; and Kloek, Arvid E., 3,743,553.

Honeywell Information Systems Inc.: *See—*
Genuit, Luther L.; and White, Robert B., 3,743,924.

Honeywell Information Systems Italia S.p.A.: *See—*
Giani, Aleardo, 3,742,845.

Hong Kong Soya Bean Products Co. Ltd., The: *See—*
Lundstedt, Erik; and Lo, Frank Yau-Yee, 3,743,515.
Lundstedt, Erik; and Lo, Frank Yau-Yee, 3,743,516.

Honjo, Satoru: *See—*
Takahashi, Isoji; Sato, Masamichi; and Honjo, Satoru, 3,743,830.

Honjo, Satoru; Takimoto, Masaaki; and Kasugai, Tsuneo, to Fuji Photo Film Co., Ltd. Method of making an electrophotographic recording member. 3,743,537, Cl. 117-215.000.

Hooker Chemical Corporation: *See—*
Geering, Emil J.; and Stratton, George B., 3,743,680.

Hooks, Chester D. Bottle orientor. 3,743,076, Cl. 198-33.0ab.

Hope-Ross, Donald Patrick: *See—*
Downer, John Douglas; Skinner, Ronald Maurice; Reed, David Robert; and Hope-Ross, Donald Patrick, 3,743,673.

Hopkins, Arthur W. Liquid dispensing container. 3,743,165, Cl. 229-17.000.

Horak, Martin S., to Vikoa, Inc. Three-piece coaxial cable connector. 3,744,007, Cl. 339-97.00r.

Horin, Shoji: *See—*
Arai, Haruhiko; Narashino, Chiba; Horin, Shoji; Ichikawa, Chiba; and Maruta, Iwao, 3,743,618.

Horiuchi, Kotaro, to Yamaha Hatsudoki Kabushiki Kaisha. Propulsion device for boats. 3,742,895, Cl. 115-34.000.

Horizons Incorporated, a division of Horizons Research Incorporated: *See—*
Koch, Stanley D.; and Gerger, Arthur H., 3,743,686.

Horn, James N.: *See—*
Lipcon, Jesse B.; and Horn, James N., 3,742,795.

Horn, Robert, to Forney Engineering Company. Single phase motor reversing starter. 3,743,903, Cl. 318-307.00a.

Hornberger, Paul: *See—*
Hohenschutz, Heinz; Hornberger, Paul; and Buelow, Horst, 3,743,674.

Horneff, Hans, to Fernseh G.m.b.H. Circuit for compensating for linearity defects in amplifiers. 3,743,958, Cl. 330-149.000.

Horrer, Paul L.; and Bridges, Robert M., to Bendix Corporation, The. Open ocean shallow water moor. 3,742,535, Cl. 9-8.00r.

Horstmann, Walter; and Siegel, Edgar, to Bayer Aktiengesellschaft. Monoazo compounds containing a substituted phthalimide diazo component. 3,743,632, Cl. 260-152.000.

Houlihan, William J., to Sandoz-Wander Inc. Method of treating bronchial asthama. 3,743,733, Cl. 424-251.000.
House, Delbert: *See—*
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Houss, Max. Snap-out set. 3,743,323, Cl. 282-23.000.
Houtman, Richard L., to Steelcase, Inc. Recessed pull. 3,742,554, Cl. 16-124.000.
Howard, Wayne R.; and Ratliff, Richard L., to Clark Equipment Company. Clutch with brake having torsional resilience. 3,743,070, Cl. 192-113.00r.
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Hrbek, George W.; Korpel, Adrianus; and Watson, William H., to Zenith Radio Corporation. Single-laser simultaneous multiple-channel character generation system. 3,744,039, Cl. 340-173.0lm.
Hubbard, Ralph P.: *See—*
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Hubbard, Robert M.; and Whitener, Philip C., to Boeing Company, The. Free trailing forward hydrofoil strut. 3,742,890, Cl. 114-665.00h.
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Huber, Ludwig Konrad, to Pennwalt Corporation. N-(phenyl-carbamyl)-amino-benzene-sulfonyl flourides. 3,743,675, Cl. 260-543.00p.
Hudson, Frederick W. Surface cleaning by ionized flow. 3,743,540, Cl. 134-1.000.
Hudziak, Josephine M. Rinsing device. 3,742,965, Cl. 134-92.000.
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Hugli, Hans W., to Kistler Instrument Corporation. Transducer with ground isolation. 3,743,869, Cl. 310-8.004.
Hugon, Pierre: *See—*
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Huntoon, Francis E.; and Kearney, James F., to Teletype Corporation. Endless carrier printer. 3,742,848, Cl. 101-93.00c.
Hursh, Jack E.: *See—*
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Hurst, James: *See—*
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Hurue, Motoi. Toy calculator for education. 3,743,750, Cl. 35-31.00d.
Hutchings, Thomas J., to North American Rockwell Corporation. Modulation servo control for frequency modulated ring laser gyro. 3,743,969, Cl. 332-7.510.
Hutchinson, William M.; and Middlestead, Richard W., to Collins Radio Company. Data demodulator apparatus. 3,743,775, Cl. 178-88.000.
Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Collapsible weighing scale. 3,743,040, Cl. 177-126.000.
Hutchison, John W., to Pullman Incorporated. Hydraulic cushion device for railway vehicles. 3,743,109, Cl. 213-43.000.
Hutner, Mark A., to Xerox Corporation. Selective fusing. 3,743,779, Cl. 219-216.000.
Hutto, Billy D. Heater device for a firearm. 3,742,635, Cl. 42-1.00r.
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Iten, Paul; and Mastner, Jiri, to Aktiengesellschaft Brown, Boveri & Cie. Method and apparatus for measuring the period of electrical signals. 3,743,420, Cl. 356-28.000.
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Iwata, Akio, to Mitsubadenkiseisakusho Co., Ltd. Apparatus for automatically disconnecting power circuit for vehicles due to impact. 3,743,849, Cl. 307-10.00r.

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Jaeger, Kurt S., to Forney Engineering Company. Burner assembly with dual register and throat construction. 3,743,471, Cl. 431-115.000.

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James, Ernest F. Garment carrier. 3,743,083, Cl. 206-7.00h.

Jameson, George Robert Kenneth, to Institute for Industrial Research and Standards. Construction of a trolley. 3,743,344, Cl. 296-20.000.

Jarvis, Harold F., to Shaw Pipe Industries, Ltd. Apparatus for conveying pipe longitudinally. 3,743,124, Cl. 214-338.000.

Jeannet, Jean-Pierre; and Leuba, Jean-Pierre, to Tesa S.A. Measuring instrument. 3,742,609, Cl. 33-143.00m.

Jenks, Nancy L. Teaching aid. 3,742,619, Cl. 35-30.000.

Jennings, Paul; and Miller, Delmar S., to Rex Chainbelt Inc. Panel edge fastening means. 3,742,673, Cl. 52-624.000.

Jeromson, James R., Jr.; and Chen, Karl K., to Weatherhead Company, The. Gaging device for crimping machine. 3,742,754, Cl. 72-402.000.

Jessup, Robert L., to Halliburton Company. Apparatus for conducting controlled well testing operations. 3,743,014, Cl. 166-69.000.

Job, Leonard Austin: *See—*
Verreyne, Abraham Jacob; Job, Leonard Austin; Rerolle, Paul; and Richter, Johan Christoffer Carl, 3,742,735.

Jobe, John D., to Shell Oil Company. Flame photometer using vibrating slit monochromator. 3,743,425, Cl. 356-87.000.

Joch, Wilhelm: *See—*
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Johannsen, Hans Werner; and Oberheim, Robert, to Braun Aktiengesellschaft. Projector for slides. 3,743,401, Cl. 353-52.000.

Johansson, August V., to General Electric Company. Supplemental wheel-slip control system. 3,743,900, Cl. 318-52.000.

Johansson, Lennart Ragnar; and Tenne, Lave, to Hasselbald, Fritz Victor. Mechanical differential for an exposure meter at photographic cameras. 3,742,829, Cl. 95-10.0fs.

Johns-Manville Corporation: *See—*
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Johnson & Johnson: *See—*
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Johnson, Edwin: *See—*
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Johnson, Fred W.; and Lloyd, Edward R., to International Business Machines Corporation. Transducer and index mounting arrangement for dictating and transcribing units. 3,743,300, Cl. 274-4.00j.

Johnson, James S., Jr., to United States of America, Atomic Energy Commission. Dual-layer hyperfiltration membrane and process for using same. 3,743,595, Cl. 210-23.000.

Johnson, Lauren L., to General Motors Corporation. Locomotive excitation and regenerative braking control arrangement. 3,743,901, Cl. 318-87.000.

Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Catalyst, catalyst preparation method, and process for catalytic hydrotreating unsaturated hydrocarbon. 3,743,684, Cl. 260-681.50r.

Johnson, Michael: *See—*
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Johnson, Robert B.; and Woodhouse, Fred N., to Eastman Kodak Company. Motion picture projector. 3,743,398, Cl. 352-157.000.

Johnson, Wesley Grant. Suction mouthpiece. 3,742,607, Cl. 32-33.000.

Johnston, Edward, to Carrier Engineering Company, Limited. Method and apparatus for applying coating material to a surface. 3,742,901, Cl. 118-8.000.

Johnston, Mack S., to Craft Systems, Inc. Tapping device for beer kegs and the like. 3,743,145, Cl. 222-400.700.

Johnston, Thomas W.; and Pippin, Jack M., to Unlimited Development, Inc. Hospital bed. 3,742,527, Cl. 5-63.000.

Jones, Ernie C., Jr. Trailer fifth-wheel lubrication. 3,743,054, Cl. 184-14.000.

Jones, John B., Jr., to Paraho Corporation. Process of calcination. 3,743,697, Cl. 423-175.000.

Jones, Norman A. Manually operable plaque removing dental tool. 3,742,608, Cl. 32-59.000.

Jones, William D.: *See—*
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Jones, William Stanley, to Texas Instruments, Incorporated. Acoustic surface-wave velocity transformation. 3,743,973, Cl. 333-30.00r.

Jordan, Constance. Stretchable pet suit with boots. 3,742,679, Cl. 54-79.000.

Jorgensen, Blanche I. Disposable and collapsible plastic cooler. 3,743,130, Cl. 220-9.00r.

Kabik, Irving; and Rosenthal, Louis A., to United States of America, Navy. Apparatus for controlling the fabrication of electroexplosive devices. 3,742,811, Cl. 86-20.00r.

Kabisch, Gerhard; and Kunkel, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Process for the production of organic hydrogen peroxide solution. 3,743,706, Cl. 423-588.000.

Kabushiki Kaisha Kinsekisha Kenkyujo: *See—*
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Kaelin, Werner, to Sulzer Brother Limited. Method of making a heat transfer device. 3,742,567, Cl. 29-157.30b.

Kagechika, Takashi: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser, Carl; and Ross, Stephen T., to Smith Kline & French Laboratories. 3-Sulfonamido-4-hydroxyphenyl-2-piperidinylcarbinol compositions. 3,743,737, Cl. 424-267.000.

Kaiser, Kenneth K., to Carrier Corporation. Absorption refrigeration system. 3,742,727, Cl. 62-476.000.

Kakac, Karel, to Vyzkumny a vyvojovy ustav zavodu vseobecneho strojirenstvi. Guiding comb tooth for air jet looms. 3,742,973, Cl. 139-127.00p.

Kalensky, Charles James: *See—*
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Kalkwaf, Lester. Pickup attachment for corn harvesters. 3,742,687, Cl. 56-119.000.

Kallander, Charles A. Radial rhythmic chair. 3,743,352, Cl. 297-285.000.

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Kaneko, Haruo: *See—*
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Kano, Kimio; Nakamura, Keiichi; and Niitaka, Shojiro, to Toyoda Koki Kabushiki Kaisha. Control devices for the radial displacement of shafts. 3,742,653, Cl. 51-165.900.

Kao, Chih-Yu, to Bell Telephone Laboratories, Incorporated. Adjustable equalizer control apparatus. 3,743,975, Cl. 333-18.000.

Kao Soap Co., Ltd.: *See—*
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Kapsambelis, Christos B.; and Collins, David J., to Computer Identics Corporation. Label reading system. 3,743,819, Cl. 235-61.11f.

Karr, Gerald W.; Page, Robert E.; and Safford, Robert D., to Beloit Corporation. Method and apparatus for reeling web material. 3,743,199, Cl. 242-65.000.

Kasahara, Yasuo, 50% to Kabushiki Kaisha Nakatani. Circuit protector. 3,743,982, Cl. 335-208.000.

Kasper, Robert J., to Growth International, Inc. Method of controlling the induction heating of an elongated workpiece. 3,743,808, Cl. 219-10.410.

Kassel, Aaron: *See—*
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Kato, Hidemasa: *See—*
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Kato, Sadatake; and Kurata, Kunio, to Damabot Radioisotope Laboratories, Ltd. Preparation of radioactive mono and di iodo sulfobromophthalein. 3,743,713, Cl. 424-1.000.

Kato, Shogo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary shaft supporting device. 3,743,365, Cl. 308-26.000.

Kato, Yoshimi, to Toyoda-Koki Kabushiki-Kaisha. Load transducer. 3,742,760, Cl. 73-141.00a.

Katsai, Margarita Yakovlevna: *See—*
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Katz, Robert E.; and Grainger, Frederick, said Grainger assor. to said Katz, Robert F. Continuous web forming of envelopes in pamphlets. 3,743,273, Cl. 270-37.000.
Katz, Robert F.: *See—*
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Katz, Yoram: *See—*
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Kaufman, Harry. Electrical wire inserting tool. 3,742,573, Cl. 29-203.00h.
Kaufman, Harry. Holding device for testing electrical connection. 3,743,270, Cl. 269-14.000.
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Kautz, George R.; and Kuryla, Alan T., to GTE Sylvania Incorporated. Paralled battier supporting system having sorting movement limiter. 3,743,878, Cl. 313-85.00s.
Kawada, Takehiko, to Denki Onkyo Co., Ltd. Driving apparatus for piezoelectric ceramic elements. 3,743,868, Cl. 310-8.100.
Kawado, Kenji: *See—*
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Kawai, Shoji, to Kabushiki Kaisha Kyoto Daiichi Kogaku and Chugai Seiyaku Kabushiki Kaisha. Colorimeter for measuring concentration and indicating the concentration as a digital quantity. 3,743,429, Cl. 356-180.000.
Kawakami, Daizo: *See—*
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Kazama, Toshio; and Seki, Kazunori, to Tamogawa Kikai Kinzoku Kabushiki Kaisha. Spring biased ball valve with rotating device. 3,742,975, Cl. 137-331.000.
Kearney, James F.: *See—*
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Keith, Charles David. Flying device. 3,742,643, Cl. 46-74.00d.
Kell, Nathaniel B., to General Motors Corporation. Lifting clamp. 3,743,342, Cl. 294-86.310.
Kelsey-Hayes Company: *See—*
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Kemp, Walters: *See—*
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Kennedy, Robert F., to United States of America, Navy. Differential pressure relief valve. 3,742,968, Cl. 137-68.000.
Kennedy, Thomas Nolan, to International Business Machines Corporation. Method for reactive sputter deposition of phosphosilicate glass. 3,743,587, Cl. 204-192.000.
Keough, Timothy James; and Kalensky, Charles James, to International Telephone and Telegraph Corporation. Power supply for an electronic PABX. 3,743,887, Cl. 317-16.000.
Kerb, Ulrich: *See—*
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Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See—*
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Kessler, Joseph A. Clamping apparatus. 3,742,560, Cl. 24-81.0as.
Kest, Donald O. Elastomer-based, pressure sensitive adhesive composition. 3,743,616, Cl. 260-27.0bb.
Kest, Donald O. Urethane base pressure sensitive adhesive. 3,743,617, Cl. 260-27.0bb.
Kienel, Joseph Edward. Decorative furniture and method of fabricating same. 3,742,871, Cl. 108-150.000.
Kilpatrick, David G.: *See—*
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Kimmel, Edward J., Sr.: *See—*
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Kinder, Richard E.: *See—*
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King, Geo. W., Limited: *See—*
Wilkinson, Keith, 3,742,861.
Kingsbury, Charles M., to Emhart Corporation. Feed mechanism for turret type article inspection machine. 3,743,123, Cl. 214-89.000.
Kinkler, William A., Jr.: *See—*
Yang, Christen H. C.; and Kinkler, William A., Jr., 3,743,570.
Kinsch, Anton H., Jr.; Rogers, William M.; and Lake, Robert A., to Crucible Inc. Furnace and method for heating and compacting powdered metal charges. 3,743,261, Cl. 266-24.000.
Kinsey, Lewis R. Press fit outlet junction box with means for detachably interlocking with electrical cord. 3,744,004, Cl. 339-74.00r.
Kirby, Robert A., to Esso Production Research Company. Marine seismic source. 3,744,020, Cl. 340-12.0sd.
Kirchhoff, Kurt, to Schneider, Jos., & Co. Optische Werke. Reproduction camera with variable image scale. 3,743,414, Cl. 355-52.000.
Kirk, Robert T., to Eaton Corporation, mesne. Discrete controller. 3,744,028, Cl. 340-172.500.
Kirsch Company: *See—*
Ford, James A., 3,743,002.
Kirtley, James L., Jr.: *See—*
Smith, Joseph L., Jr.; and Kirtley, James L., Jr., 3,743,875.
Kiser, Elmer P. Diaphragm actuated valve. 3,743,237, Cl. 251-25.000.
Kistler Instrument Corporation: *See—*
Hugli, Hans W., 3,743,869.
Kitai, Atsuo; Tone, Hiroshi; and Ozaki, Asaichiro, to Sanraku-Ocean Co., Ltd. Method of fermentation utilizing a multi-stage fermenting device. 3,743,582, Cl. 195-141.000.
Kitamura, Hitoshi, to Sanyo Electric Co., Ltd. Preset tuning device for television receiver. 3,742,771, Cl. 74-10.600.
Kitano, Yoshizo, mesne: *See—*
Sato, Kenji, 3,742,791.
Kiyama, Masao: *See—*
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 3,743,707.
Klamyr Aktiebolag: *See—*
Richter, Johan C. F. C., 3,743,572.
Klancnik, Adolph V. Sorting machines. 3,743,093, Cl. 209-80.000.
Klebe, Johann F., to General Electric Company. Process for preparing α-pyrones. 3,743,658, Cl. 260-343.500.
Kleinberg, Israel, to Harco Electronics Ltd. Antimony electrodes and method of manufacturing same. 3,742,594, Cl. 29-592.000.
Kleiner, Eduard K., to Ciba-Geigy Corporation. Thiosuccini acid hindered phenolic ester polymer stabilizers. 3,743,623, Cl. 260-45.85s.
Klimkovsky, Islav Mecheslavovich: *See—*
Kozhevnikov, Sergei Nikolaevich; Cherevik, Jury Ivanovich; Tkachenko, Arkady Semenovich; Klimkovsky, Islav Mecheslavovich; Shvedchenko, Anton Antonovich; and Pljusnin, Vladimir Vasilievich, 3,742,751.
Klingler, Leo J.: *See—*
Baranow, Sanford; and Klingler, Leo J., 3,743,548.
KLM Company, The: *See—*
Childs, Edmund; and Ostrowski, Raymond, 3,743,128.
Kloek, Arvid E.: *See—*
Scott, Myrsyl Walter; and Kloek, Arvid E., 3,743,553.
Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki, to Riker Laboratories, Inc. Substituted isochromans and processes therefor. 3,743,659, Cl. 260-345.200.
Klompas, Nicholas, to General Electric Company. Dual flow cooled turbine arrangement for gas turbine engines. 3,742,706, Cl. 60-39.660.
Klopfert, Louis, to Elphiac. Apparatus for continuous induction heating. 3,743,811, Cl. 219-10.690.
Klug, Howard R., to Graphic Arts Center. Book jacketing apparatus. 3,742,542, Cl. 11-1.00r.
Klunker, Heinz; and Rauch, Martin, to Siemens Aktiengesellschaft. Copper plated base plate with nickel plated insert for semiconductor component-housing. 3,743,895, Cl. 317-234.00r.
Knappe, Laverne Frank, to International Business Machines Corporation. Wire printer with print head moved in figure eight pattern. 3,742,846, Cl. 101-93.00c.
Knapsack Aktiengesellschaft: *See—*
Sennewald, Kurt; Vogt, Wilhelm; and Glaser, Hermann, 3,743,607.
Kneupel, Hans-Joachim; and Steffin, Bernd, to VEB Kombinat Robotron. Superconducting learning matrix. 3,744,038, Cl. 340-173.100.
Knoke, Silas J.: *See—*
Garceau, David S.; and Knoke, Silas J., 3,742,868.
Knoll A.G. Chemische Fabriken: *See—*
Goerlich, Bruno; Kubinyi, Hugo; and Steidle, Walter, 3,743,633.
Knoll, Ernst, to Relief-Technik GmbH. Method for constructing three-dimensional models and device therefor. 3,742,620, Cl. 35-41.000.
Kobayashi, Hirokazu, to Nippon Electric Company, Ltd. Variable equalizer. 3,743,959, Cl. 330-31.000.
Kobayashi, Kukashi: *See—*
Yano, Osahiko; and Kobayashi, Kukashi, 3,743,769.
Koch, Edward G. Lawnmower and handle therefor. 3,743,313, Cl. 280-47.370.
Koch, Robert E.: *See—*
Rusk, Gerald R.; and Koch, Robert E., 3,742,789.
Koch, Stanley D.; and Gerger, Arthur H., to Horizons Incorporated, a division of Horizons Research Incorporated. Unsaturated polyester resins which cure in the presence of water and which contain at least one dehydro monomer. 3,743,686, Cl. 260-861.000.
Kochetkov, Nikolai Konstantinovich: *See—*
Barkov, Nikolai Konstantinovich; Kucherova, Natalya Fedorovna; Kochetkov, Nikolai Konstantinovich; Zhukova, Izida Grigorievna; and Sharkova, Nina Mikhailovna, 3,743,740.
Kodama, Reijiro; Nakasuji, Yugoro; and Yamada, Nobuhiro, to Takeda Chemical Industries, Ltd. Disease control composition for silkworms employing certain-naphthyridine compounds. 3,743,723, Cl. 424-120.000.
Koenig, Paul W.: *See—*
Desmond, Richard J.; and Koenig, Paul W., 3,742,599.
Koenig, Peter: *See—*
Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, 3,743,007.
Kohara, Haruki, to Nippon Electric Co., Ltd. Magnetic single wall domain logic circuit. 3,743,851, Cl. 307-88.0ic.
Kohler Co.: *See—*
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Kohn, Gustave K.: *See*—
Brown, Melancthon S., 3,743,643.

Kohtani, Yotaka, to Canon Kabushiki Kaisha. Exposure control device. 3,742,826, Cl. 95-10.0ct.

Kolb, Karl-Heinz: *See*—
Laurent, Henry; Kerb, Ulrich; Kolb, Karl-Heinz; Wiechert, Rudolf; and Gerhards, Erich, 3,743,741.

Kollar, John, to Halcon International Inc. Separation of water in alkylene glycol mono and diester purification by azeotropic distillation. 3,743,672, Cl. 260-497.00a.

Koller, Hans, to Buss A.G. Drying process and spray dryer for carrying out the process. 3,742,611, Cl. 34-8.000.

Kolmarx, Louis Edward, to Scovill Manufacturing Company. Process for preparing tubeless pneumatic tires for use structure by which the process may be utilized. 3,742,998, Cl. 152- 427.000.

Koman Aerospace Corporation: *See*—
Flannelly, William G., 3,742,770.

Komori, Shigehiro, to Canon Camera Kabushiki Kaisha. Drive mechanism for copying machine. 3,743,274, Cl. 271-3.000.

Komori, Shigehiro; Sato, Jiro; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Electrophotographic copying apparatus. 3,743,406, Cl. 355-8.000.

Koncen, Raymond E., to United States of America, Navy. Laser image and power level detector having thermographic phosphor. 3,743,835, Cl. 250-83.30h.

Kondo, Isao: *See*—
Matsuzaki, Soichiro; and Kondo, Isao, 3,742,830.

Kondo, Shinichi: *See*—
Umezawa, Hamao; Kondo, Shinichi; Maeda, Kenji; Takeuchi, Tomio; and Hamada, Masa, 3,743,580.

Kongelbeck, Sverre, to United States of America, Navy. Missile launcher. 3,742,813, Cl. 89-1.807.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hirata, Masao; Tarumi, Noriyoshi; and Sato, Masayuki, 3,743,609.

Kooguchi, Kazunori; Ito, Osamu; Makiyama, Nobusake; Miyahara, Yoshio; and Murai, Korenori, to Mitsui Toatsu Chemicals Incorporated. Process for the production of suspensions of phenol-formaldehyde resins. 3,743,619, Cl. 260-29.300.

Kool, Bram: *See*—
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 3,743,400.

Koontz, Robert D.; Heitkamp, Richard R.; and Jackson, Robert E., to FMC Corporation. Manufacture of fiber reinforced polymer article. 3,743,561, Cl. 156-192.000.

Koppers Company: *See*—
Thomas, Charles E., 3,742,714.

Korpel, Adrianus: *See*—
Hrbek, George W.; Korpel, Adrianus; and Watson, William H., 3,744,039.

Korry Manufacturing Company: *See*—
Fuller, Maurice D., 3,743,806.

Korzen, Benni: *See*—
Chodorov, Rachel; and Korzen, Benni, 3,743,293.

Kosinski, Joseph W., to Bendix Corporation, The. Adjustable connection for a quick adapter. 3,743,333, Cl. 287-52.080.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Ribbon-type fusible element for high-voltage fuses and fuse including the element. 3,743,994, Cl. 337-159.000.

Kozhevnikov, Sergei Nikolaevich; Cherevik, Jury Ivanovich; Tkachenko, Arkady Semenovich; Klimkovsky, Islav Mecheslavovich; Shvedchenko, Anton Antonovich; and Pljusnin, Vladimir Vasilievich. Working stand of cold-rolling tube mill. 3,742,751, Cl. 72-249.000

Kozlovic, John M.: *See*—
Frink, Russell E.; and Kozlovic, John M., 3,744,045.

Krain, Harry Wolfgang, to Precision Engineering Company (Reading) Limited. Torque spanners. 3,742,786, Cl. 81-52.500.

Kramer, James H., to Goodrich, B. F., Company, The. Seal for rotary oscillating shaft. 3,743,306, Cl. 277-187.000.

Kratel, Gunter; and Vogt, Georg, to Elektroschmelzwerk Kempten G.m.b.H. Process for manufacturing boron halides. 3,743,698, Cl. 423-292.000.

Kraty, Nigel P., to Wilkinson Sword Limited. Radiation-sensitive camera scanning. 3,743,844, Cl. 250-334.000.

Krauss-Maffei Aktienpesellschaft: *See*—
Gebhardt, Rudolf; and Goppert, Max, 3,742,862.

Kravitz, Arthur I. Shoe polishing apparatus. 3,742,545, Cl. 15-31.000.

Krekow, Gerhard; Schramm, Jurgen; and Witter, Klaus, to U.S. Philips Corporation. Electrographic recording method and devices for performing this method. 3,743,411, Cl. 355-17.000.

Kroh, Uriah B., to United States of America, Navy. Frangible cover assembly for missile launchers. 3,742,814, Cl. 89-1.800.

Kroner, Klaus; and Feindt, Hans-Heinrich, to U.S. Philips Corporation. Circuit arrangement for generating an amplitude amplitude-modulated sawtooth voltage. 3,743,882, Cl. 315-13.00c.

Kronfeld, Alan C.: *See*—
Honegger, Arthur; Schrepfer, Willy E.; and Kronfeld, Alan C., 3,744,040.

Kroyer, Karl Kristian Kobs; and Thomsen, Lars Olav. Process and apparatus for producing a free-flowing grannular glucose product. 3,743,539, Cl. 127-16.000.

Krupp, Roy Stephen; and Tomko, Lawrence Andrew, to Bell Telephone Laboratories, Incorporated. Time coded signalling technique in writing control memories of time slot interchangers and the like. 3,743,788, Cl. 179-15.0aq.

Krupp, Roy Stephen, to Bell Telephone Laboratories, Incorporated. Busy bit for time division multiplex signals to reduce signal processing time. 3,743,789, Cl. 179-15.0by.

Kubinyi, Hugo: *See*—
Goerlich, Bruno; Kubinyi, Hugo; and Steidle, Walter, 3,743,633.

Kucherova, Natalya Fedorovna: *See*—
Barkov, Nikolai Konstantinovich; Kucherova, Natalya Fedorovna; Kochetkov, Nikolai Konstantinovich; Zhukova, Izida Grigorievna; and Sharkova, Nina Mikhailovna, 3,743,740.

Kuehnle, Manfred R., to Audac Corporation. Data card terminal. 3,743,817, Cl. 235-61.11j.

Kuhn, Karl Walter, to Societe d'Etudes de Machines Termiques. Valve for an internal combustion engine or the like. 3,742,927, Cl. 123-189.000.

Kuhn, Wilfried: *See*—
Zimmermann, Hans; Rudolph, Otfried; and Kuhn, Wilfried, 3,742,847.

Kuklewicz, George T. Motorized crankcase oil drainage system. 3,743,053, Cl. 184-1.500.

Kuljian, Maynard J., to Ampex Corporation. Intrinsic controls for information retrieval systems employing digital codes integral with audio information. 3,744,030, Cl. 340-172.500.

Kunkel, Wolfgang: *See*—
Kabisch, Gerhard; and Kunkel, Wolfgang, 3,743,706.

Kupsky, George A., to Burroughs Corporation. Cold cathode display panel having a multiplicity of gas cells. 3,743,879, Cl. 313-108.00b.

Kurata, Kunio: *See*—
Kato, Sadatake; and Kurata, Kunio, 3,743,713.

Kuryla, Alan T.: *See*—
Kautz, George R.; and Kuryla, Alan T., 3,743,878.

Kush, George S., to Nuclear Medical Computer Corporation. Apparatus and method for dissolving soluble gas in a liquid. 3,742,988, Cl. 141-2.000.

Kushmuk, Walter P.: *See*—
Hutchinson, William Y.; and Kushmuk, Walter P., 3,743,040.

Kyoeikogyo Kabushikikaisha: *See*—
Tazaki, Michiharu, 3,743,366.

La Clair, Robert C., to Uniroyal, Inc. Dispersing aid-containing blowing agents for polymers and method of using the same. 3,743,605, Cl. 252-350.000.

LaBarge, Robert L.: *See*—
Willis, Wilburn C.; and LaBarge, Robert L., 3,743,129.

Lacey, Richard F.: *See*—
Cutler, Leouard S.; and Lacey, Richard F., 3,744,042.

Lagodmus, George P., to Hughes Aircraft Company. Cryogenic refrigerator. 3,742,719, Cl. 62-6.000.

L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Foulard, Jean; and Galey, Jean, 3,743,500.
Verreyne, Abraham Jacob; Job, Leonard Austin; Rerolle, Paul; and Richter, Johan Christoffer Carl, 3,742,735.

Lake, Robert A.: *See*—
Kinsch, Anton H., Jr.; Rogers, William M.; and Lake, Robert A., 3,743,261.

Lancini, Giancarlo: *See*—
Hengeller, Carlo; Lancini, Giancarlo; and Sensi, Piero, 3,743,635.

Landers, Adrian L.: *See*—
Morton, David L.; and Landers, Adrian L., 3,742,993.

Landsman, Robert M., to Perkin-Elmer Corporation, The. Method of forming relief printing plate. 3,742,853, Cl. 101-401.100.

Lane, Buddy F.: *See*—
Brobeck, William R.; and Lane, Buddy F., 3,743,801.

Lang, Marshall Ira, to Bajer Industries Incorporated. Suspended ceiling system including a grid network. 3,742,674, Cl. 52-666.000.

Langenborg, Nils: *See*—
Feemster, John R.; and Langenborg, Nils, 3,742,701.

Langer, John F. Unloading chute assembly and means detachably carrying same on a vehicle. 3,743,121, Cl. 214-44.00r.

Langstrom, Hakon Olof Scheibe, to SKF Industrial Trading and Development Company NV. Cage for a rolling bearing. 3,743,369, Cl. 308-201.000.

Lapetina, Robert A., to Edo Western Corporation. Method for searching a medium. 3,744,013, Cl. 340-3.00r.

Laporte Chemicals Limited: *See*—
Harris, John Frederick George, 3,743,600.

Larimer, Myron J.: *See*—
Henry, David A.; and Larimer, Myron J., 3,742,665.

Larker, Hans; and Lindberg, Mats, to Allmanna Svenska Elektriska Aktiebolaget. Vertical tube furnace for high operating pressure. 3,743,132, Cl. 263-40.00r.

Larocca, Edward W.: *See*—
Finnegan, William G.; Burkardt, Lohr A.; McLean, William B.; McEwan, William S.; and Larocca, Edward W., 3,742,859.

Laser Alignment, Inc.: *See*—
Roodvoets, Roger J., 3,742,581.

Lasker, Noel Emanuel, to Corrugated Paper Manufacturing Pty, Limited. Envelope. 3,743,173, Cl. 229-68.000.

Lauer, Robert J.: *See*—
Hall, Donivan L.; Lauer, Robert J.; and Robazskiewicz, Gerald D., 3,743,057.

Laurelli, James A.: *See*—
Adelizzi, Richard S.; and Laurelli, James A., 3,742,704.

Laurent, Henry; Kerb, Ulrich; Kolb, Karl-Heinz; Wiechert, Rudolf; and Gerhards, Erich, to Schering Aktiengesellschaft. Pharmaceutical

composition based on 11-halogen substituted steroids. 3,743,741, Cl. 424d242.000.

Lawing, Burmah D.; and Rankin, Carol Dean, to Speizmin Industries, Inc. Packaging apparatus and method. 3,742,676, Cl. 53-21.0fw.

Laxo, Darryl E., to United States of America, Navy. Controlled temperature garment. 3,743,012, Cl. 165-39.000.

Le Douarec, Jean-Claude; Beregi, Laszlo; and Hugon, Pierre, to Societe en nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale. Pharmaceutical compositions containing 1-benzoyl-3, 5-dimethyl pyrazole in the treatment of inflammation 3,743,739, Cl. 424-273.000.

Lear Siegler, Inc.: *See—*
Garceau, David S.; and Knoke, Silas J., 3,742,868.
Hedrick, Geoffrey S., 3,744,050.
Lykken, Lowell O.; and Shah, Naren M., 3,743,221.

Lear Siegler, Incorporated: *See—*
Crum, McDonald; and Hampton, Edward L., 3,743,349.

Leatherman, Cleown A., to Dow Chemical Company, The. Preparation of matte-surfaced styrene polymer film. 3,743,693, Cl. 264-340.000.

LeBlanc, Oliver H., Jr.: *See—*
Brown, John F., Jr.; Slusarczuk, George M. J.; and LeBlanc, Oliver H., Jr., 3,743,588.

Lectra Data, Inc.: *See—*
Martin, Roy A.; and Pittman, Clarence E., 3,743,177.

Lectron Industries, Inc.: *See—*
Branz, Weldon K., 3,743,296.

Ledex, Inc.: *See—*
Yost, Betty Jane, 3,743,987.

Lee, Billy R. Automated paving machine. 3,743,432, Cl. 404-84.000.

Lee, David M.: *See—*
Thiessen, Henry A.; Sobottka, Stanley; and Lee, David M., 3,743,840.

Lee, John W. Disposable male urinary incontinence device. 3,742,953, Cl. 128-295.000.

Lee, Raymond, Organization, Inc., The: *See—*
Gibbons, Gregory J., 3,743,312.
Reynolds, Harry R., 3,743,298.

Leesona Corporation: *See—*
Barney, John J.; and Flanagan, James L., 3,743,143.

Leffler, Donald E.; and Dempster, William B., to Dayco Corporation. Magnetic printing cylinder. 3,742,852, Cl. 101-378.000.

Legg, Brian C.; and Cowie, Eric G. Tap changing current regulator. 3,743,921, Cl. 323-4.000.

Lehe, Russell B.; and Torbett, Richard L., to Norandex, Inc. Slatted flooring connector system. 3,742,911, Cl. 119-28.000.

Leimbach, John George, to Sporlan Valve Company. Thermostatic expansion valve for refrigeration systems. 3,742,722, Cl. 62-225.000.

Leis, Michael D.; and Gray, Robert C., to Digital Equipment Corporation. Control circuit for a tape reader. 3,743,839, Cl. 260-219.00d.

Leiter, Leigh D.: *See—*
Fries, Carl J., Jr.; Leiter, Leigh D.; and Linda, Frank R., 3,742,576.

Leiter, Leigh David: *See—*
Guerster, Rene L.; and Leiter, Leigh David, 3,743,267.

Leitold, Matyas: *See—*
Schmidt, Gunther; Engelhorn, Robert; and Leitold, Matyas, 3,743,734.

Lemelson, Jerome H. Method of making a ducted sheet assembly and composite article. 3,743,493, Cl. 65-54.000.

Lemoine, Jacques: *See—*
Vidal, Jean; Lugand, Paul Henri; Lemoine, Jacques; and Parisot, Jean, 3,742,708.

Lempka, Hans Joachim, to Perkin-Elmer Limited. Sampling apparatus for photoelectron spectrometry. 3,743,831, Cl. 250-49.5ae.

Lenz, Arnold: *See—*
Rogler, Walter; Lenz, Arnold; and Joch, Wilhelm, 3,743,711.

Lessona Corporation: *See—*
Bense, William M., 3,742,692.

Lesueur, Gilbert, to Alsthom-Savoisienne. Current reducers utilizing the Faraday effect. 3,743,929, Cl. 324-96.000.

Leuba, Jean-Pierre: *See—*
Jeannet, Jean-Pierre; and Leuba, Jean-Pierre, 3,742,609.

Leuthold, Dale H., to Signetics Corporation. Exclusive-or ECL logic circuit. 3,743,856, Cl. 307-216.000.

Leuze, Rex E.: *See—*
Ferguson, Don E.; Haas, Paul A.; and Leuze, Rex E., 3,742,720.

Levinstein, Edna. Apparatus for assorting flowers according to length. 3,743,092, Cl. 209-74.000.

Levrini, Tullio. Lifting device with swinging arms. 3,743,049, Cl. 182-200.000.

Lewis, Joseph D., Jr., to Universal Packaging, Inc. Strap tensioner. 3,742,558, Cl. 24-68.00d.

Leybold-Heraeus-Verwaltung G.m.b.H.: *See—*
Bettermann, Dieter; and Schomisch, Alois, 3,742,614.

Lian, John R.; and Pennila, Simo A. O., to Stellar Industries, Inc. Lawn mower with hydrostatic drive. 3,742,685, Cl. 56-7.000.

Libbey-Owens Ford Company: *See—*
Swillinger, Francis L., 3,743,495.

Lichte, Albert, to Scholemann Aktiengesellschaft. Reduction of solid, liquid or gaseous oxide-containing compounds. 3,743,541, Cl. 134-2.000.

Lieberman, Edgar M.: *See—*
Polsky, Norman; Spencer, Ambrose; Pike, Daniel W.; Lieberman, Edgar M.; and Snyder, Bobbie L., 3,742,869.

Liebman, Charles S.: *See—*
Renskers, John O.; Liebman, Charles S.; Salzman, Robert J.; and Schroeder, Charles E., 3,743,990.

Liebscher, Anton: *See—*
Auberry, Horace R.; and Liebscher, Anton, 3,742,544.

Liermann, Charles J. Combined frame and elevatable pool table assembly. 3,743,287, Cl. 273-5.00b.

Liggett & Myers Incorporated: *See—*
Calleson, Donald A., 3,743,528.

Ligutom, Angelo Y. Olan smog device. 3,742,682, Cl. 55-223.000.

Lillard, William H., 1/2 to Parsons, D. Kirk. Combination chair and chaise lounge. 3,742,526, Cl. 5-12.000.

Lilly, Eli and Company: *See—*
Glass, Henry G., 3,743,374.
Porter, Herschel D.; and Taylor, Harold M., 3,743,736.

Linda, Frank R.: *See—*
Fries, Carl J., Jr.; Leiter, Leigh D.; and Linda, Frank R., 3,742,576.

Lindberg, Mats: *See—*
Larker, Hans; and Lindberg, Mats, 3,743,132.

Lindblom, Karl Thore, to Ostbergs Fabriks AB. Delimbing arrangement. 3,742,990, Cl. 144-2.00z.

Linderoom, Herman, to Ingersoll-Rand Company. Hydrostatic compliant sleeve seal. 3,743,304, Cl. 277-27.000.

Lindly, Ross N.: *See—*
Walser, Melvin L.; and Lindly, Ross N., 3,742,628.

Lindsay, Paul H.; and Hughes, Edward H., to General Electric Company. Cabinet for a radio receiver or similar article. 3,743,370, Cl. 312-7.00r.

Lipcon, Jesse B.; and Horn, James N., to Industrial Nucleonics Corporation. Cigarette dense end monitoring and controlling apparatus. 3,742,795, Cl. 83-13.000.

Lish, Paul M.: *See—*
Dugan, Kendrick W.; and Lish, Paul M., 3,743,746.

Litton Business Systems, Inc.: *See—*
Perez, Guillermo, 3,743,073.

Livingston, William L., to Factory Mutual Research Corporation. Fire protection system. 3,743,022, Cl. 169-16.000.

Ljubimou, Evgeny Mikhailovich: *See—*
Rabodzei, Nikolai Vasilievich; Ljubimou, Evgeny Mikhailovich; and Nadobnikov, Mikhail Nikolaevich, 3,743,845.

Lloyd, Dennis Arthur: *See—*
Constable, Geoffrey E. P.; and Lloyd, Dennis Arthur, 3,743,134.

Lloyd, Edward R.: *See—*
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Lo, Frank Yau-Yee: *See—*
Lundstedt, Erik; and Lo, Frank Yau-Yee, 3,743,515.
Lundstedt, Erik; and Lo, Frank Yau-Yee, 3,743,516.

Loeffler, Larry J., to Merck & Co., Inc. Producing anti-fibrinolytic activity with aminobicyclo-acetic acid derivatives. 3,743,742, Cl. 424-319.000.

Longefellow, Earl. Gas appliance connector. 3,743,328, Cl. 285-226.000.

Longwood Development Corporation: *See—*
Frezzo, Guido; and Piacentino, Thomas J., 3,743,117.

Lonnemo, Kurt R., to Sperry Rand Corporation. Power transmission. 3,742,820, Cl. 91-497.000.

Loose, Peter William; and Sharman, Richard Arthur, to Marconi Company Limited, The. Colour television camera equipments. 3,743,766, Cl. 178-5.400.

Loosley, Donal W.: *See—*
Harmon, Kermit S.; and Loosley, Donal W., 3,743,182.

Lopez, Arnelson Norvaldo. Mold assembly to form a container. 3,743,467, Cl. 425-387.000.

Lopez-Batiz, Manlio, to Hatch Incorporated. Polyphase electric system protective apparatus. 3,743,889, Cl. 317-27.00r.

Lorenz, Klaus: *See—*
Giessler, Horst; Lorenz, Klaus; Brutschin, Gerhard; and Walti, Marc, 3,743,116.

Loss, Michael. Cervical dilator. 3,742,956, Cl. 128-341.000.

Louthan, Jean H.; Helm, Arlow D.; and Wynne, Ralph A., to Phillips Petroleum Company. Apparatus for joining a plastic fitting to a plastic pipe. 3,743,566, Cl. 156-499.000.

Lowell, Francis C., to Research Frontiers Incorporated. Method for maintaining the separation of plates. 3,742,600, Cl. 29-592.000.

Lowenhaupt, Edward Harris, III; and Edmunds, Edward, Jr., to S.E.C. Corporation. Metal recovery process. 3,743,585, Cl. 204-112.000.

LTV Ling Altec, Inc.: *See—*
Hunt, Frederick C., 3,743,870.

Lu, Chien Yang: *See—*
Brown, Merle F.; and Lu, Chien Yang, 3,743,090.

Lucas, David N., to Westinghouse Electric Corporation. Adjustable fixture for applying transformer spacers. 3,742,572, Cl. 29-203.00p.

Lucas, Joseph, (Industries) Limited: *See—*
Hicks, Harris Vernon, 3,743,885.
Weston, Paul, 3,742,780.

Lucas, Raymond L. R. Apparatus for handling rolls of strip material for unrolling thereof. 3,743,198, Cl. 242-58.600.

Luce, Nunzio A., to Optel Corporation. Liquid crystal driving and switching apparatus utilizing multivibrations and bidirectional switches. 3,744,049, Cl. 340-336.000.

Ludwig, David P., to Western Electric Company, Incorporated. Method of complaint bonding. 3,743,558, Cl. 156-73.000.

Ludwig, Jerome H.: *See—*
Phillips, Michael R.; and Ludwig, Jerome H., 3,742,731.

Luft, Robert G., to International Harvester Company. Dual station throttle and service brake control means. 3,743,064, Cl. 192-3.00r.

Lugand, Paul Henri: *See—*
Vidal, Jean; Lugand, Paul Henri; Lemoine, Jacques; and Parisot, Jean, 3,742,708.

Luk, Man Shan, to Interlingual Cultural Machinery, Inc. Interlingual typewriter. 3,743,071, Cl. 197-1.00a.

Lumme, Edgar, to Winkhaus, Aug. Pin tumbler lock system. 3,742,744, Cl. 70-358.000.

Lundstedt, Erik; and Lo, Frank Yau-Yee, to Hong Kong Soya Bean Products Co. Ltd., The. Preparation of soybean blue cheese from milk. 3,743,515, Cl. 99-116.000.

Lundstedt, Erik; and Lo, Frank Yau-Yee, to Hong Kong Soya Bean Products Co., Ltd., The. Preparation of cheese from soybean milk. 3,743,516, Cl. 99-116.000.

Lupinsky, Pesach. Modified L furniture structure. 3,743,353, Cl. 297-445.000.

Lurie, Michael Jay: *See—*
Sen lh, Charles Chung; and Lurie, Michael Jay, 3,743,507.

Luschen, Fred H.; and Piccony, Raymond C. Vertical grill device. 3,742,838, Cl. 99-389.000.

Luschen, Fred H.; and Piccony, Raymond C. Removable infant seat. 3,743,321, Cl. 280-202.000.

Lykes, Robert E., to Smith, A. O., Corporation. Method of manufacturing a submersible motor. 3,742,595, Cl. 29-596.000.

Lykken, Lowell O.; and Shah, Naren M., to Lear Siegler, Inc. Aircraft flight control apparatus. 3,743,221, Cl. 244-77.00a.

Lyman, Richard E., to United States Steel Corporation. Method of feeding continuous-casting machines using controlled gas pressure head. 3,743,138, Cl. 222-1.000.

Lyman, Richard E., to United States Steel Corporation. Method and apparatus for initiating pouring from a blocked opening of a bottom pour vessel. 3,743,139, Cl. 222-1.000.

Lynch, Charles T., to Baltimore Aircoil Company, Inc., mesne. Self coupling submersible pump. 3,743,447, Cl. 417-360.000.

Lyon, Robert B.: *See—*
Dahlin, Robert K.; Arnold, Harold J.; Cleland, Hugh M.; Lyon, Robert B.; and Polkinghorn, Robert W., 3,743,948.

Lys, Hans-Peter; and Ryffel, Kaspar, to Inventa A.G. fur Forschung und Patentverwertung. Process for the production of monofilaments of polyamide 12. 3,743,690, Cl. 264-178.00f.

Lysaght, John (Australia) Limited: *See—*
Marks, Austin Cedric; and Cirson, Harold Vivian, 3,742,905.

Macguire-Cooper, Richard Terence. Nozzles. 3,743,189, Cl. 239-579.000.

Machida, Kanji: *See—*
Nishimura, Muneo; Machida, Kanji; and Hiya, Koji, 3,743,985.

Machlett Laboratories, Incorporated, The: *See—*
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Maciolek, Joseph R., to United Aircraft Corporation. Direct lift, drag and heading improvement for multi-lift aircraft control system. 3,743,214, Cl. 244-2.000.

Maclorowski, Anthony E. Offset key punch key and verifier machine for encodingpunch cards. 3,743,175, Cl. 234-30.000.

MacPherson, Herbert G.: *See—*
Bettis, Edward S.; MacPherson, Herbert G.; Perry, Alfred M.; and Smith, Orville L., 3,743,577.

Maeda, Kenji: *See—*
Umezawa, Hamao; Kondo, Shinichi; Maeda, Kenji; Takeuchi, Tomio; and Hamada, Masa, 3,743,580.

Maeda, Taketora, to Entex Industries Inc. Simulated volleyball game. 3,743,291, Cl. 273-85.00c.

Maerz, Robert J., to Gerber Garment Technology, Inc. Sheet material cutting apparatus including a vacuum holdown system having a roller mechanism for handling air-impermeable sheets. 3,742,802, Cl. 83-451.000.

Magers, Paul E.; and Simons, Earl J., to Alpha Industries, Inc. Surgical suction pump assembly. 3,742,952, Cl. 128-278.000.

Magnavox Company, The: *See—*
Chipman, Jack R.; and Morrow, Joseph E., 3,743,774.

Maier, Bruno, to Swiss Aluminium Ltd. Plunger for extrusion press. 3,742,752, Cl. 72-273.000.

Maier, James J., to United States of America, Air Force. Redundant area coding system. 3,743,765, Cl. 178-6.800.

Maier, Karl, to International Standard Electric Corporation. Telecommunication switching system employing time division multiplex connections. 3,743,785, Cl. 179-15.0bm.

Mailfert, Alain Jacques: *See—*
Chabrerie, Jean-Pierre; and Mailfert, Alain Jacques, 3,743,874.

Maitre, Guy, to U.S. Philips Corporation. DC-AC converter. 3,743,918, Cl. 321-44.000.

Majesko, George A.: *See—*
Gottlieb, Arnold J.; and Majesko, George A., 3,743,485.

Makiyama, Nobusake: *See—*
Kooguchi, Kazunori; Ito, Osamu; Makiyama, Nobusake; Miyahara, Yoshio; and Murai, Korenori, 3,743,619.

Makovec, Andrew M., to Weston Instruments, Inc. Linear motion zero adjuster. 3,742,772, Cl. 74-18.200.

Makula, Daniel; Druet, Monique; and Gonthier, Beatrice, to Progil. 1,2,4-Oxadiazine-3,6-triones. 3,743,641, Cl. 260-244.00r.

Malcolm, James A. Paperboard dispenser for tape. 3,743,151, Cl. 225-47.000.

Malcolm, William R. Compression spring shroud. 3,743,183, Cl. 239-264.000.

Maley, Joseph P. Battery-operated rotisserie with detachable spit supports. 3,742,839, Cl. 99-421.0hv.

Mallinckrodt Chemical Works: *See—*
Scully, Daniel F., 3,743,668.

Malmin, Oscar. Rhinoplasty treatment , method, and apparatus. 3,742,943, Cl. 128-76.00c.

Maloney, William T., to Sperry Rand Corporation. System for identifying personnel by fingerprint verification and method therefor. 3,743,421, Cl. 356-71.000.

Mamiya, Gohee. Multi-stage absorption refrigeration system. 3,742,728, Cl. 62-476.000.

Mancus, H. Vincent, to United States of America, Navy. Cylindrical throat nozzle with movable sonic blades for obtaining dual area throat and thrust vector control. 3,743,184, Cl. 239-265.190.

Mandroian, Harold, to Atek Industries, Inc. Standing wave pump. 3,743,446, Cl. 417-240.000.

Manning, Dan. Leveling and locking pin. 3,742,807, Cl. 85-5.00r.

Mansfeld, Hans, to Migua Mitteldeutsche Gummi und Asbestgesellschaft and Hammerschmidt & Co. Elastic gap sealing device. 3,742,669, Cl. 52-396.000.

Manspeaker, Robert O.: *See—*
Smith, James P., 3,743,433.

Manuel, Barry; and Pastan, Harvey L. Cardiac monitor. 3,742,937, Cl. 128-2.05t.

Marasco, Paul M.; Frohock, Millard M., Jr.; and Mc Adam, William E., Jr., said Marasco assor. to United States of America, Army and said McAdam assors. to Hughes Aircraft Company. Ballistic compuxer. 3,743,818, Cl. 235-61.50r.

Marathon Oil Company: *See—*
Norton, Charles J.; and Falk, David O., 3,743,018.

Marburg, Stephen, to Merck & Co., Inc. Hydroxyethylation with ethylene sulfate. 3,743,653, Cl. 260-309.000.

Marcacci, James P.: *See—*
Heckrotte, John R., Sr.; and Marcacci, James P., 3,743,239.

Marchisano, Michael: *See—*
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Marcoux, Arthur; and Stansbury, John H., to McDonnell Douglas Corporation. Method of installing papered fasteners having a high percent of contact surface. 3,742,584, Cl. 29-407.000.

Marg, Charles M.: *See—*
Marg, Donald B.; and Marg, Charles M., 3,743,144.

Marg, Donald B.; and Marg, Charles M. Recloseable calking cartridge nozzles. 3,743,144, Cl. 222-180.000.

Marimon, Robert L.; Matthews, Robert L.; and Maughan, Michael D.; deceased (by Maughan, Thera; administratrix), to United States of America, Navy. Automatic electronic filter system. 3,744,015, Cl. 340-3.00d.

Marion, Charles P.; and Reynolds, Blake, to Texaco Development Corporation. Synthesis gas generation. 3,743,606, Cl. 252-373.000.

Markin, Jury Nikandrovich: *See—*
Bondarenko, Vitaly Tikhonovich; Markin, Jury Nikandrovich; Voronov, Nikolai Stefanovich; Sagiryants, Nikolai Magdygovich; Salnikov, Ivan Ivanovich; and Petrenko, Konstantin Pavlovich, 3,742,749.

Marks, Austin Cedric; and Cirson, Harold Vivian, to Lysaght, John (Australia) Limited. Stripping excess coating liquid from moving strip material. 3,742,905, Cl. 118-63.000.

Marotti, Ernest F.: *See—*
Roberg, Kurt W.; and Marotti, Ernest F., 3,743,081.

Martic, Peter A.; and McCabe, John M., to Eastman Kodak Company. Radiographic elements and binders. 3,743,833, Cl. 250-80.000.

Martin, Alvin M.: *See—*
Hardick, Alden; Martin, Alvin M.; and House, Delbert, 3,742,575.

Martin, Georg, to Gebr. Claas. Arrangement for controlling regulatable pumps. 3,742,821, Cl. 91-506.000.

Martin, Henry; Beriger, Ernst; and Ebner, Ludwig, to Ciba-Geigy AG. B-iodoethyl ester of trichloroacetic acid. 3,743,670, Cl. 260-487.000.

Martin, John E., to Wickham Piano Plate Company, The. System for packaging piano plates. 3,743,089, Cl. 206-65.00b.

Martin, Roy A.; and Pittman, Clarence E. Voting machine. 3,743,176, Cl. 235-50.00a.

Martin, Roy A.; and Pittman, Clarence E., to Lectra Data, Inc. Voting machine. 3,743,177, Cl. 235-51.000.

Martinez, Daniel G., to Rainbow-Lifegard Products, Inc. Exercising device. 3,743,280, Cl. 272-57.00r.

Martinez, Felix Jesus, to Baxter Laboratories, Inc. Spiral mass transfer device with low flow resistance and fluid volume. 3,743,098, Cl. 210-321.000.

Marui, Masatoshi: *See—*
Nakajima, Tohru; Mori, Chiharu; and Marui, Masatoshi, 3,742,828.

Maruta, Iwao: *See—*
Arai, Haruhiko; Narashino, Chiba; Horin, Shoji; Ichikawa, Chiba; and Maruta, Iwao, 3,743,618.

Maruta, Kiyoko: *See—*
Arai, Haruhiko; Narashino, Chiba; Horin, Shoji; Ichikawa, Chiba; and Maruta, Iwao, 3,743,618.

Maruta, Yoshi: *See—*
Arai, Haruhiko; Narashino, Chiba; Horin, Shoji; Ichikawa, Chiba; and Maruta, Iwao, 3,743,618.

Marwede, Gunter: *See—*
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Marx, Rodger L.: *See—*
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Maschinenbau Louise GmbH: *See—*
Teske, Fritz; Teske, Lothar; and Dreismann, Robert, 3,743,119.

Mashimo, Yukio, to Canon Kabushiki Kaisha. Servo-control system. 3,743,912, Cl. 318-599.000.

Mason, George W.; Bollmeier, Allen F., Jr.; and Peppard, Donald F., to United States of America, Atomic Energy Commission. Separation of americium and curium. 3,743,696, Cl. 423-10.000.

Mason, Jerry M.; and McKibben, James L., to General Motors Corporation. Apparatus for supplying a tuning voltage to an electronically tuned FM radio receiver from the oscillator of an AM radio receiver. 3,743,943, Cl. 325-453.000.

Mason, Roy Glenn, to Anderson Jacobson, Inc. Tape drive apparatus for cassettes. 3,743,157, Cl. 226-195.000.

Massachusetts Institute of Technology: *See—*
Smith, Henry Ignatius; Spears, David Lewis; and Stern, Ernest, 3,743,842.
Smith, Joseph L., Jr., 3,743,867.
Smith, Joseph L., Jr.; and Kirtley, James L., Jr., 3,743,875.

Mast, Christian Francois: *See—*
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Master Lock Company: *See—*
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Mastner, Jiri: *See—*
Iten, Paul; and Mastner, Jiri, 3,743,420.

Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, to Foundation, The: Research Institute of Electric and Magnetic Alloys, The. Alloys for magnetic recording-reproducing heads. 3,743,550, Cl. 148-31.550.

Masuyama, Toshio: *See—*
Yajima, Seishi; Hirai, Toshio; Ishikawa, Toshikatsu; and Masuyama, Toshio, 3,744,000.

Mate Punch and Die Company: *See—*
Patterson, Clinton E.; and Schweiger, Richard J., 3,742,804.

Mathauser, William R. Hydraulically operated shift mechanism for bicycles and the like. 3,742,777, Cl. 74-242.300.

Mathys, Gaston: *See—*
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Matievich, William: *See—*
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Matsumoto, Shoichi; Tsukada, Tomomichi; Umetsu, Kazuo; and Fukaya, Hiroyuki, to Tokyo Shibaura Electric Co., Ltd. and Toyo Chemical Co., Ltd. Plastic radiation indicator of the color change type. 3,743,846, Cl. 250-474.000.

Matsuo, Masatoshi: *See—*
Ohkawa, Masaaki; Matsuo, Masatoshi; Sakaguchi, Tadao; Sato, Syozi; and Momoi, Yoshikazu, 3,743,602.

Matsushita Electric Industrial Co., Ltd.: *See—*
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Yano, Osahiko; and Kobayashi, Kukashi, 3,743,769.

Matsuzaki, Soichiro; and Kondo, Isao, to Olympus Optical Co., Ltd. Information holding apparatus. 3,742,830, Cl. 95-10.0ct.

Mattel, Inc.: *See—*
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Matteson, Lawrence J.: *See—*
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Matthews, Robert L.: *See—*
Marimon, Robert L.; Matthews, Robert L.; and Maughan, Michael D., 3,744,015.

Mattox, Robert S. Method for reducing tartar accumulation on teeth. 3,743,721, Cl. 424-95.000.

Maughan, Michael D.: *See—*
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Maughan, Thera: *See—*
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Mayer, Rudolf: *See—*
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Mayo, William Harold; Winters, Arthur Burnett; Davis, James Bradley, Jr.; Edenfield, Harrison; and Gainous, Aubrey Cornelius, to Campbell Soup Company. Plant harvesting machine. 3,743,024, Cl. 171-61.000.

Maziarka, Joseph A.; and Maziarka, Robert J. Garment hanger device. 3,743,106, Cl. 211-123.000.

Maziarka, Robert J.: *See—*
Maziarka, Joseph A.; and Maziarka, Robert J., 3,743,106.

Mc Adam, William E., Jr.: *See—*
Marasco, Paul M.; Frohock, Millard M., Jr.; and Mc Adam, William E., Jr., 3,743,818.

Mc Cloud, Chester V. Right and left hand lawn edger-trimmer. 3,743,028, Cl. 172-15.000.

MCA Inc.: *See—*
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McCabe, John M.: *See—*
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McCarthy, Stephen G.; Roth, Irving; and Stark, Edward W., to Sperry Rand Corporation. Coded reticle having a shifted pseudo random sequence. 3,743,390, Cl. 350-314.000.

McCauley, Thomas Vernon; Barnes, Herbert W.; and Suman, George O., Jr., to Shell Oil Company. Method for cleaning well perforations. 3,743,021, Cl. 166-311.000.

McColl, Bruce J., to Owens-Illinois, Inc. Roundwood stump processor. 3,742,991, Cl. 144-3.00d.

McDonnell Douglas Corporation: *See—*
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Duskin, Fred E., 3,742,663.
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McIlroy, Jack E., to General Signal Corporation. Brake head-centering device for railway brake apparatus. 3,743,062, Cl. 188-212.000.

McInturff, Alfred D.; and Abbatiello, Frank J., to United States of America, Atomic Energy Commission. Resistive envelope for a multifilament superconductor wire. 3,743,986, Cl. 335-216.000.

McKibben, James L.: *See—*
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McLean, William B.: *See—*
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McMahon, Donald H., to Sperry Rand Corporation. Light deflector apparatus. 3,743,379, Cl. 350-150.000.

McMahon, Floyd J.: *See—*
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McMahon, John, to Dymo Industries, Inc. Cartridge for use with an embossing tool having self-loading tape-feed mechanism. 3,743,196, Cl. 242-55.000.

McMickle, Robert L. Spinning reel with controllably rotatable bail. 3,743,207, Cl. 242-84.21a.

McMillan, James R. Cluster boss saw for edger saw. 3,742,796, Cl. 83-102.100.

McMillan, James R. Feed roll sensor for edger saw. 3,742,992, Cl. 144-246.00r.

McWethy, Irvin E., to Philco-Ford Corporation. Shaft-to-hub coupling. 3,743,331, Cl. 287-53.00r.

Meacham, James Frank, to I-T-E Imperial Corporation. Socket for multiple meter panel. 3,744,010, Cl. 339-157.00r.

Mead Johnson & Company: *See—*
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Medical Development Corporation: *See—*
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Medlin, Roger E.: *See—*
Walden, Richard M.; Medlin, Roger E.; Warren, Robert A.; and Weers, Delbert D., 3,744,043.

Meek, Elmo L.; and Kinder, Richard E., to Miro-Flex Company, Inc. Reflector signal marker for highway use. 3,742,897, Cl. 116-63.00p.

Melconian, Jerry O., to Avco Corporation. Variable geometry combustor construction. 3,742,703, Cl. 60-39.320.

Meldreth Electronics Limited: *See—*
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Mellow, Dale F., to Hercules Incorporated. Nitrocellulose propellant containing diffused linear polyester burning rate deterrent. 3,743,554, Cl. 149-11.000.

Mensing, Arthur E.; Clark, James W.; and Stoeffler, Richard C., to United Aircraft Corporation. Vortex flow system for separating oil from an oil-water mixture. 3,743,095, Cl. 210-84.000.

Mensing, Arthur E.; and Stoeffler, Richard C., to United Aircraft Corporation. Vortex separator using core plates. 3,743,102, Cl. 210-512.000.

Meopta, narodni podnik: *See—*
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Merkel, Karl: *See—*
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Merrick Scale Mfg. Company: *See—*
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Merrill, Richard C.: *See—*
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Merriner, Delbert L.; and Miller, Woodrow W., to Richdel, Inc. Valve assembly. 3,743,240, Cl. 251-129.000.
Merz, William C.; Methlie, George J.; and Sattler, Rolf W., to Honeywell Inc. Fluid discharge device with deformable lance. 3,743,545, Cl. 136-114.000.
Meshii, Toshio, to Atomic Power Development Associates, Inc. Heat exchangers. 3,742,915, Cl. 122-32.000.
Messrs. R. & E. Hopt KG: *See—*
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Meszlenyi, Robert. Method for producing a sequence of moving pictures and apparatus for the performance of the aforesaid method. 3,743,394, Cl. 352-100.000.
Metcalfe, Robert P., to BASF Wyandotte Corporation. Apparatus for sealing an anode connection and method therefore. 3,743,592, Cl. 204-266.000.
Methlie, George J.: *See—*
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Meyer, Armin: *See—*
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Meyer, Bruce F. Inflatable geodesic tent. 3,742,658, Cl. 52-2.000.
Meyer, Herbert; Mayer, Rudolf; and Volkheimer, Lothar, to Messrs. R. & E. Hopt KG. Channel selecting unit for HF telecommunication equipment. 3,743,976, Cl. 334-47.000.
Mica Corporation, The: *See—*
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Michaelis, Horst: *See—*
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Michaels, Bruno, to Bell & Howell Company. Film retention means for film cartridges. 3,743,212, Cl. 242-197.000.
Micro Devices Corporation: *See—*
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Microform Data Systems, Inc.: *See—*
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Miller, John H., III, to Hewlett-Packard Company. Translational motion apparatus for the magnetic transducers of a disc memory. 3,743,794, Cl. 179-100.2ca.
Miller, Robert C.; Miller, Carl K.; and Paulson, Donald L., to Borg-Warner Corporation. Hospital bed control mechanism for handicapped patient. 3,743,807, Cl. 200-172.00a.
Miller, Robert E., & Co., Inc.: *See—*
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Miller, Robert J.; and Dorfman, Walter, to Decision Data Corporation. Data processing equipment. 3,743,275, Cl. 271-10.000.
Miller, Wendell E., to Borg-Warner Corporation. Control valve. 3,742,982, Cl. 137-625.680.
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Miya, Toshio: *See—*
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Miyake, Yasutomo; Shinada, Toshio; and Mogi, Takao, to Kabushiki Kaisha Kinsekisha Kenkyujo. Collector-base coupled double transistor crystal oscillator. 3,743,968, Cl. 331-116.00r.
Miyashita, Akitoshi, to Matsushita Electric Industrial Co., Ltd. Lever-operated variable resistor. 3,743,999, Cl. 338-118.000.
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Moehlenpah, Walter G. Assembling and securing apparatus for fabricating wood structures. 3,742,569, Cl. 29-200.00p.
Moffett, Robert B., to Upjohn Company, The. 1-Aminophenyl-4H-s-triazols [4,3-a] [1,4] benzodiazepines. 3,743,652, Cl. 260-308.00r.
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Credali, Lino; and Parrini, Paolo, 3,743,597.
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Moor, Hans. Pneumatic jack. 3,743,248, Cl. 254-93.00r.
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Mulaskey, Bernard F., to Chevron Research Company. Hydrodesulfurization of naptha with a group VIII metal component combined with synthetic layered crystalline aluminosilicate. 3,743,594, Cl. 208-216.000.
Muller, Jupp; and Reigler, Harald, to Trilux-Lenze KG. Rotary holder for lighting fittings. 3,743,829, Cl. 240-153.000.
Munch, Josef, to Bock, Otto, Orthopadische Industrie KG, Firma. Mattress for invalids. 3,742,528, Cl. 5-91.000.
Mungaard, Hans, to Danfoss A/S. Method of attaching an electrode to a semiconductor element. 3,743,538, Cl. 117-221.000.
Munt, Irwin, to Weston Instruments, Inc. Multimeter battery and display function test apparatus. 3,743,939, Cl. 324-73.00r.
Murai, Korenori: *See—*
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Muroi, Tadashi; Oguri, Yoshitaka; and Hamaoka, Hidenori, to Hitachi, Ltd. and Hitachi Chemical Company, Ltd. Foamable thermoplastic beads and a process for the preparation thereof. 3,743,611, Cl. 260-2.50b.
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Musschoot, Albert, to General Kinematics Corporation. Sound deadener for vibratory conveyor. 3,743,080, Cl. 198-220.0ba.
Muzer, Adam: *See—*
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Myers, Hugh I., Jr., to FMC Corporation, mesne. Tire mounting and demounting machine. 3,742,999, Cl. 157-1.280.
Nadobnikov, Mikhail Nikolaevich: *See—*
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Nagasawa, Yoshio; and Yano, Shunji, to Daiwa Can Co., Ltd. Container for foodstuffs. 3,743,522, Cl. 99-181.00r.
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Naito, Okito, to Kabushiki Kaisha Suwa Seikosha. Circuit for quartz crystal timepiece. 3,742,698, Cl. 58-23.00a.
Naito, Shun-ichi. Nicotinoylaminoethanesulfonylaminothiazole and pharmaceutically acceptable acid addition salts thereof. 3,743,647, Cl. 260-294.80d.
Nakagawa, Jihei, to Olympus Optical Co., Ltd. Large aperture six component photographic lens. 3,743,387, Cl. 350-215.000.
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Nakajima, Tohru; Mori, Chiharu; and Marui, Masatoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera having means for computing a flash guide number. 3,742,828, Cl. 95-10.0ce.
Nakamura, Keiichi: *See—*
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Nakamura, Soichi, to Nippon Kogaku K.K. Optical system for the magnification varying portion of an ultra-telephoto type zoom lens. 3,743,384, Cl. 350-184.000.
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Nakazawa, Yoshiyuki; Tsuji, Nobuo; Sawahara, Masao; and Hinata, Nasanao, to Fuji Photo Film Co., Ltd. Optical super-sensitized silver halide emulsion. 3,743,510, Cl. 96-123.000.
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Takashi, to Fuji Photo Film Co., Ltd. Photographic silver halide supersensitized emulsions. 3,743,517, Cl. 96-124.000.
Nansel, Harold K., to National Crane Corporation. Solenoid controlled valve system. 3,743,241, Cl. 251-138.000.
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Needham, Robert F.; and Geyer, Wallace T., to ACF Industries, Incorporated. Railway tank car having sloping bottom. 3,742,866, Cl. 105-360.000.
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Neu, John P., to GTE Automatic Electric Laboratories Incorporated. Diode matrix card assembly with conductive elastomeric material connectors. 3,743,890, Cl. 317-101.0cp.
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Newbern, Roberta. Hot pick comb. 3,742,964, Cl. 132-118.000.
Newco Manufacturing Company, Inc.: *See—*
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Newman, Howard S.; and Greenough, Roger W., to United States of America, Navy. Clipped correlation to signal-to-noise ratio meter. 3,743,932, Cl. 324-140.00d.

Newport News Shipbuilding and Dry Dock Company: *See—*
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Nicholas, Merle E., to Honeywell Inc. Electrochemical vapor detector. 3,743,589, Cl. 204-195.00r.

Nicholson, Allan D.; and Campbell, Darrel, to Procter & Gamble Company. Process for preparing propane triphosphonic lower alkyl esters. 3,743,688, Cl. 260-970.000.

Nicolas, Michel Jacques Robert; and Mast, Christian Francois, to Thomson-CSF. Electrical connecting device. 3,743,989, Cl. 336-5.000.

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Nippon Carbon Company Limited: *See—*
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Nippon Telegraph & Telephone Public Corporation: *See—*
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Nishida, Sumio, to Hitachi, Ltd. Method for fabricating a display device and the device fabricated thereby. 3,742,598, Cl. 29-574.000.

Nishimura, Kazuo. Mechanical stress detecting device. 3,742,759, Cl. 73-141.00a.

Nishimura, Muneo; Machida, Kanji; and Hiya, Koji, to Matsushita Electric Industrial Co., Ltd. Convergence system. 3,743,985, Cl. 335-212.000.

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Nolan, Chris, to Abbott Laboratories. Anti-coagulant isolation. 3,743,722, Cl. 424-98.000.

Nolte, Kenneth G., to Amoco Production Company. Protecting a structure in water covered with sheet ice. 3,742,715, Cl. 61-1.000.

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Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Oil recovery process using an unhydrolyzed polyacrylamide and partially hydrolyzed polyacrylamide mobility control agent. 3,743,018, Cl. 166-275.000.

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Nowotny, Kurt A.; and Shilling, Wilbur L., to Crown Zellerbach Corporation. Process of forming polyolefin fibers. 3,743,272, Cl. 264-69.000.

Noyce, Robert N., mesne: *See—*
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Numata, Saburo; and Kagechika, Takashi, to Fuji Shashin Koki Kabushiki Kaisha. Synchronization means for motion picture projector and tape recorder. 3,743,392, Cl. 352-17.000.

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N.V. Koninklijke Sphinx-Ceramique v/h Petrus Regout: *See—*
Gulikers, Josef Hubertus, 3,742,843.

N.V. Optische Industrie de Delft: *See—*
van der Does, Lucas, 3,743,276.

N.V. Optische Industrie de Oude Delft: *See—*
Van Haaften, Johan, 3,742,634.

Nyman, Bengt Ebbe Harald, to Atlas Copco Aktiebolag. Programmable sequential control means having a plurality of control circuits for controlling a respective plurality of discrete suboperations. 3,744,029, Cl. 340-172.500.

Oakes, Grant A. Oxygen linke. 3,743,814, Cl. 219-76.000.

Oberg Manufacturing Co., Inc.: *See—*
Vecchi, John C., 3,742,797.

Oberheim, Robert: *See—*
Johannsen, Hans Werner; and Oberheim, Robert, 3,743,401.

Oblander, Kurt; and Fricker, Ludwig, to Daimler-Benz Aktiengesellschaft. Multi-cylinder injection internal combustion engine. 3,742,923, Cl. 123-119.00b.

Odone, Giovanni, to Bolex International S.A. Continuous film movement motion picture apparatus. 3,743,396, Cl. 352-109.000.

O'Donovan, John P., to Schering Corporation. Means for inhibiting scours in piglets by administering a source of citrate ions. 3,743,744, Cl. 424-317.000.

Oehmann, Manfred: *See—*
Dosch, Peter; Oehmann, Manfred; and Benz, Emil, 3,743,907.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
Bernard, Alain M.; and Gay, Michel J. L., 3,742,767.

Offner, Franklin F., to Spectra-Physics, Inc. Tunable lasers. 3,743,965, Cl. 331-94.500.

Oftedahl, Lee, to Vanderstelt, Charles R. Apparatus for orienting and supporting the cylinders of an internal combustion engine. 3,742,579, Cl. 29-214.000.

Ogawa, Takenobu: *See—*
Higashinakagawa, Iwao; Nakagawa, Takashi; Ogawa, Takenobu; Takeno, Syozo; and Yasuda, Nobuaki, 3,744,041.

Ogino, Katsuhiko: *See—*
Naito, Kenji; Ogino, Katsuhiko; Okudo, Hiroshi; Tanaka, Michio; Kamatani, Yoshio; Mukai, Hiroshi; and Takeuchi, Tatsuro, 3,743,665.

Ogita, Nobuya, to Hoya Glass Works. Amorphous, non-denitrious fluorophospate optical glass, free of yellow coloring and process for producing the same. 3,743,492, Cl. 65-32.000.

Oguri, Yoshitaka: *See—*
Muroi, Tadashi; Oguri, Yoshitaka; and Hamaoka, Hidenori, 3,743,611.

Ohkawa, Masaaki; Matsuo, Masatoshi; Sakaguchi, Tadao; Sato, Syozi; and Momoi, Yoshikazu, to Sumitomo Chemical Company, Ltd. Optical brightening agents in detergent compositions. 3,743,602, Cl. 252-110.000.

Ohmoto, Seiji: *See—*
Ohmoto, Seiji, 3,742,541.

Ohmoto, Seiji, to Ohmoto, Seiji and Kabushiki Kaisha Nogoya Rashi Seisakusho. Tool for forming internal screw-threads and method of making the same. 3,742,541, Cl. 10-141.00r.

Ohnishi, Masahiro: *See—*
Ohta, Takahiro; and Ohnishi, Masahiro, 3,743,771.

Ohno, Genji. Electrostatic printing method and apparatus. 3,743,408, Cl. 355-10.000.

Ohta, Takahiro; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Television reproducer for a movie film. 3,743,771, Cl. 178-7.200.

Oishi, Hideo: *See—*
Ando, Kunio; Oishi, Hideo; Sagawa, Takao; and Hirano, Seiji, 3,743,724.

Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm instrument with temporary roll beat circuit. 3,743,757, Cl. 84-1.030.

Okano, Kunikatsu. Process for manufacturing antiperspirant. 3,743,717, Cl. 424-65.000.
O'Keefe, Bernard J.; and Grier, Herbert E., to EG & G, Inc. Low-impedance, high-voltage discharge circuit. 3,743,852, Cl. 307-109.000.
Okubo, Takashi: *See—*
Murayama, Masao; Seto, Eisuke; Okubo, Takashi; Morita, Iwao; and Dobashi, Itsuo, 3,743,666.
Okudo, Hiroshi: *See—*
Naito, Kenji; Ogino, Katsuhiko; Okudo, Hiroshi; Tanaka, Michio; Kamatani, Yoshio; Mukai, Hiroshi; and Takeuchi, Tatsuro, 3,743,665.
Okuniewski, Vincent F.; and Flowers, Leonard S. Swimming aid device. 3,742,539, Cl. 9-308.000.
Olday, Fred L. Method and apparatus for slicing furs. 3,742,799, Cl. 83-431.000.
Olin Corporation: *See—*
Franco, Nicholas B.; and Robinson, Martin A., 3,743,664.
Oliver, Joseph R.: *See—*
Fletcher, Ralph A.; and Oliver, Joseph R., 3,743,357.
Oliver, Joseph R., to Bendix Corporation, The. Corner closure assembly. 3,742,668, Cl. 52-288.000.
Oliver, L. R., Inc.: *See—*
Oliver, Lloyd R., 3,742,655.
Oliver, Lloyd R., to Oliver, L. R., Inc. Abrading wheel. 3,742,655, Cl. 51-356.000.
Oliver Machinery Company: *See—*
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., 3,742,565.
O'Loughlin, Francis A., to Thomas & Betts Corporation. Extrusible electrical connector and connection method. 3,744,006, Cl. 339-97.00r.
Olsen, Robert M., to Vapor Corporation, The. Transit vehicle door signal apparatus. 3,744,022, Cl. 340-52.00r.
Olson, Floyd C.; and Trautman, Jack C., to Mayer, Oscar, & Co., Inc. Hydrolysate of collagen as a sausage ingredient. 3,743,514, Cl. 99-109.000.
Olympus Optical Co., Ltd.: *See—*
Matsuzaki, Soichiro; and Kondo, Isao, 3,742,830.
Nakagawa, Jihei, 3,743,387.
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Ong, Daniel: *See—*
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Ooba, Shigehiro: *See—*
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Oohara, Saburo; and Takeuchi, Masahiro, to Kanegafuchi Boseki Kabushiki Kaisha. Method of producing sheet material having microporous structure. 3,743,530, Cl. 117-63.000.
Ooishi, Tadashi: *See—*
Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Ooba, Shigehiro; Tanaka, Katsutoshi; Nodera, Katsuji; Ooishi, Tadashi; and Kameda, Nobuyuki, 3,743,651.
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Oplatka, Georg, to Aktiengesellschaft Brown, Boveri & Cie. Device for evaporative cooling towers with wetted walls. 3,743,256, Cl. 261-98.000.
Opprecht, Paul Jakob. Method for automatic manufacture of metal container bodies, and welding machine for application thereof. 3,743,813, Cl. 219-67.000.
Optel Corporation: *See—*
Luce, Nunzio A., 3,744,049.
Oriel, George J., to Xerox Corporation. Toner cleaning and storing apparatus. 3,742,551, Cl. 15-256.510.
Ormiston, Robert A.: *See—*
Sweeney, Thomas E.; Condit, Philip M.; Ormiston, Robert A.; and Nixon, Walter Barry, 3,743,218.
Ornapress AG: *See—*
Hallauer, Siegfried; Mathys, Gaston; and Wenk, Hans, 3,743,458.
Oropallo, Robert A., to American Brass and Aluminum Foundry, Inc. Drain fitting. 3,742,525, Cl. 4-288.000.
Orr, Clyde P., to Monsanto Company. Phosphorus manufacture. 3,743,700, Cl. 423-322.000.
Orsi, Ernest; d/b/a Orco Products: *See—*
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Ortloff, Gerald D.: *See—*
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Diamond, Lew H., 3,743,058.
Otsu, Ikuo: *See—*
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Ott, Robert E., to SCM Corporation. Process for generating vesicular material having porous, sorptive surface structure, and apparatus coated with same. 3,742,930, Cl. 126-19.00r.
Otto, Friedrich, to Stephan, A., und Sohne. Comminutor-mixer. 3,743,192, Cl. 241-101.00b.
Ousey, David George, to Tracked Hovercraft Limited. Electric power supply systems. 3,743,795, Cl. 191-2.000.
Owens-Illinois, Inc.: *See—*
Best, John F., 3,742,677.
Dietrich, Heinz J.; and Steiger, Edward L., 3,743,681.
Gries, Richard J., 3,742,798.
McColl, Bruce J., 3,742,991.
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Packaging Corporation: *See—*
Nederveld, Terrill L., 3,743,171.
Padjen, George; and Brugger, Joseph A., to Bethlehem Steel Corporation. Method of continuously quenching molten metal coatings. 3,743,535, Cl. 117-114.00r.
Paepke, Horst, to Warner & Swasey Company, The. Knitting machine. 3,742,733, Cl. 66-50.00r.
Page, Robert E.: *See—*
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Pall Corporation: *See—*
Gross, Robert I., 3,742,970.
Palm, Bernhard, to Snaplite Displays, Inc. Illuminated display sign. 3,742,633, Cl. 40-133.00b.
Palma, James R. Drive means for a vessel. 3,742,894, Cl. 115-15.000.
Palmer, Reed Albert: *See—*
Raffaelli, Joseph Gino; and Palmer, Reed Albert, 3,742,601.
Pamlenyi, George, to Carlson, Chesley F., Co. Density calculator. 3,743,821, Cl. 235-64.700.
Papantoniou, Christos: *See—*
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Paraho Corporation: *See—*
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Parisot, Jean: *See—*
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Park-Ohio Industries, Inc.: *See—*
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Delpaggio, Anthony F., 3,743,809.
Parke, Davis & Company: *See—*
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Parrini, Paolo: *See—*
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Credali, Lino; and Parrini, Paolo, 3,743,597.
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Parsons, Basil I.: *See—*
Shaw, Geoffrey T.; and Parsons, Basil I., 3,743,709.
Parsons, D. Kirk: *See—*
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Pasman, Jay S., to United States of America, Army. IR test of rotating bands. 3,743,834, Cl. 250-83.30d.
Pastan, Harvey L.: *See—*
Manuel, Barry; and Pastan, Harvey L., 3,742,937.
Pastorel, Robert J.: *See—*
Appleton, Arthur L.; and Pastorel, Robert J., 3,743,800.
Patel, Bhupendra C., to Kendall Company, The, mesne. Catheter with self-aligning inflation passage. 3,742,959, Cl. 128-349.00b.
Patelhold Patentverwertung- & Elektro-Holding AG: *See—*
Snedkerud, Ole, 3,743,954.
Patrick, Richard B.; and Sonia, John, 1/2 Union Carbide Corporation and 1/2 to Sun Graphic Systems, Inc. Mold construction having thermal baffle for molding articles without distortion such as plastic printing plates and the like. 3,743,463, Cl. 425-195.00.
Patterson, Clinton E.; and Schweiger, Richard J., to Mate Punch and Die Company. Small station shear proof punch. 3,742,804, Cl. 83-637.000.
Paukert, Miloslav; and Skopal, Jan, to Meopta, narodni podnik. Reproduction objective formed of five lenses. 3,743,388, Cl. 350-220.000.
Paul, Gerard T., to Perkin-Elmer Corporation, The. Method and apparatus for providing a security system for a computer. 3,744,034, Cl. 340-172.500.
Paulson, Donald L.: *See—*
Miller, Robert C.; Miller, Carl K.; and Paulson, Donald L., 3,743,807.
Pefferman, William C., to PPG Industries, Inc. Treatment of titanium tetrachloride dryer residue. 3,742,612, Cl. 34-9.000.
Pence, Elbert A.: *See—*
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Penney, Albert W., Jr.: *See—*
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Pennila, Simo A. O.: *See—*
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Pennsylvania Engineering Corporation: *See—*
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Sczerba, Stanley T., 3,742,763.
Pennwalt Corporation: *See—*
Huber, Ludwig Konrad, 3,743,675.
Pensak, Philip, to Colgate-Palmolive Company. Inflatable container. 3,742,994, Cl. 150-1.000.
Pentecost, Eugene E., to North American Rockwell Corporation. Elongated spring coil conductors applying tension force to pushbutton actuators in keyboard matrix switch assembly. 3,743,798, Cl. 200-5.00r.
Peppard, Donald F.: *See—*
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Percher, Guy, to Schlumberger Instruments et Systems. Data transmission system on one line. 3,743,936, Cl. 325-55.000.
Perez, Guillermo, to Litton Business Systems, Inc. Print head shifting mechanism. 3,743,073, Cl. 197-55.000.
Pergament, Henry. Anti-skid device for automobiles. 3,742,996, Cl. 152-225.000.
Periphonics Corporation: *See—*
Emerson, Thomas, 3,743,793.
Perkin-Elmer Corporation, The: *See—*
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Paul, Gerard T., 3,744,034.
Perkin-Elmer Limited: *See—*
Lempka, Hans Joachim, 3,743,831.
Perkins, Charles H.; Brakebill, Harold G.; Goff, Earl; and Caldwell, Edward N., to Robertshaw Controls Company. Heat exchanger system and method and parts therefor or the like. 3,743,180, Cl. 236-16.000.
Perkins, William L., III; and Fisk, David C., to United Aircraft Corporation. Brushless DC motor. 3,743,902, Cl. 318-138.000.
Perrella, Guido; and Genest, Robert, to Testograph Limited. Testing machine. 3,742,617, Cl. 35-48.000.
Perret, Jean Charles: *See—*
Bourguet, Jean-Marie; and Perret, Jean Charles, 3,742,721.
Perret, Roger, to Application des Gaz. Lighters, having a flint and knurled wheel, for burners. 3,743,472, Cl. 431-274.000.
Perry, Alfred M.: *See—*
Bettis, Edward S.; MacPherson, Herbert G.; Perry, Alfred M.; and Smith, Orville L., 3,743,577.
Perry, Mark J. Mounting device for low pressure tire indicating mechanisms. 3,742,896, Cl. 116-34.00r.
Person, Rune, to Sprinter System of America, Ltd. Nestable, stackable, leak-proof container. 3,743,169, Cl. 229-31.00r.
Peters, Albert: *See—*
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Peters, Guilford B., to Brunswick Corporation. Coalescing filters for oil-water separators. 3,743,599, Cl. 210-490.000.
Peters, Walter B.: *See—*
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Peterson, Donald O.: *See—*
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Peterson, John B., to Grace, W. R., & Co. Storage and dispensing rack. 3,743,104, Cl. 211-60.000.
Peterson, Russell I., Jr.; and Coady, David R., to Cumberland Engineering Company. Apparatus for feeding sheet material. 3,743,155, Cl. 226-171.000.
Petracek, Francis J.: *See—*
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Petrenko, Konstantin Pavlovich: *See—*
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Petro-Tex Chemical Corporation: *See—*
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Petty, Gary C.: *See—*
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Petzi, Fritz; and Baumann, Helmut. Electrical ceiling heating in tunnel kilns. 3,743,753, Cl. 13-25.000.
Peyrot, Jean-Pierre. Self-centering clamp for butt-welding tubes. 3,743,812, Cl. 219-60.00a.
Pfaff Industriemaschinen GmbH: *See—*
Franz, Ludwig, 3,742,880.
Pfleger, Frederick W. Signal summator. 3,743,822, Cl. 235-92.00c.
Phiffer, Roy O. Impact pressure therapy apparatus. 3,742,940, Cl. 128-2.50r.
Philadelphia Quartz Company: *See—*
Weldes, Helmut H., 3,743,610.
Philco-Ford Corporation: *See—*
Cushing, Charles J.; Schwind, Kurt C.; and Vander Neut, Richard D., 3,743,431.
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Phillips, Edwin R.: *See—*
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Phillips, Michael R.; and Ludwig, Jerome H., to Queensbury Opal Co., Ltd. Gem having light piping fibres with cores of high refractive index and clad layers of lower refractive index. 3,742,731, Cl. 63-32.000.
Phillips Petroleum Company: *See—*
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Louthan, Jean H.; Helm, Arlow D.; and Wynne, Ralph A., 3,743,566.
Ramsay, Ray D., 3,743,529.
Phillips, Ross F., to Shell Oil Company. Apparatus and method for storing two-phase liquids. 3,742,974, Cl. 137-172.000.
Philofsky, Elliott M.: *See—*
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Phipps, Raymond Harold, to Robinson Waxed Paper Company Limited, The. Production of heat seals. 3,743,562, Cl. 156-378.000.
Piacentino, Thomas J.: *See—*
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Luschen, Fred H.; and Piccony, Raymond C., 3,743,321.
Piech, Ferdinand, to Porsche, Dr.-Ing. h.c.F., K.G., Firma. Arrangement for electrically actuated windows of vehicles, especially motor vehicles. 3,742,646, Cl. 49-28.000.
Pierens, Daniel A. Trash baler. 3,742,842, Cl. 100-212.000.
Pierrot, Francois; and Schwachhofer, Ghislain. Process for the manufacture of carbon disulphide and for the recovery of sulphur. 3,743,702, Cl. 423-443.000.
Pieters, Leon Andre; and Wren, James Frank, to Meldreth Electronics Limited. Image analysing. 3,743,772, Cl. 178-7.200.
Pietrzak, Joe P., to General Motors Corporation. Ice tray grid with combined camming handle and detachable ice tong tool. 3,743,234, Cl. 249-203.000.
Pike, Daniel W.: *See—*
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Pippin, Jack M.: *See—*
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Pirc, Anton. Rotary curie point magnetic engine. 3,743,866, Cl. 310-4.000.
Pit-Bar Manufacturing Company: *See—*
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Pittman, Clarence E.: *See—*
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Martin, Roy A.; and Pittman, Clarence E., 3,743,177.
Pittoreau, Pierre, to Societe des Aciers Fins de l'Est. Chain conveyors with standardized elements. 3,743,078, Cl. 198-121.000.
Plasko, Emil Robert, to Micro Devices Corporation. Portable electric hand-held clothes steamer. 3,742,629, Cl. 38-69.000.
Plath, Ernst-Dieter, to Mayer & Cie Maschinenfabrik, Firma. Jacquard pattern control arrangement for circular knitting machines. 3,742,732, Cl. 66-42.000.
Pljusnin, Vladimir Vasilievich: *See—*
Kozhevnikov, Sergei Nikolaevich; Cherevik, Jury Ivanovich; Tkachenko, Arkady Semenovich; Klimkovsky, Islav Mecheslavovich; Shvedchenko, Anton Antonovich; and Pljusnin, Vladimir Vasilievich, 3,742,751.
Pohl, Eugene. Torque reaction table. 3,742,758, Cl. 73-134.000.
Polaroid Corporation: *See—*
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Moodie, Donald E., 3,743,381.
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Polsky, Norman; Spencer, Ambrose; Pike, Daniel W.; Lieberman, Edgar M.; and Snyder, Bobbie L., to Fixtures Manufacturing Corporation. Table for vertical stacking and horizontal ganging. 3,742,869, Cl. 108-64.000.
Pommer, Ernst Heinrich: *See—*
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; Pommer, Ernst Heinrich; and Mohr, Rudolf, 3,743,642.
Pommerening, Uwe A.: *See—*
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Poole, James P.; Snyder, Herbert C.; and Boschini, Mark A., to Brockway Glass Company. Method of strengthening glass and increasing the scratch resistance of the surface thereof. 3,743,491, Cl. 65-30.000.
Pooley, Charles Kent; and Dillingham, Edward, to Data Source Corporation. Phototransistor automatic gain control. 3,743,837, Cl. 250-206.000.
Pope, Adam N., to General Electric Company. Force balanced split ring dynamic shaft seals. 3,743,303, Cl. 277-27.000.

Popovich, Montgomery T.: *See—*
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Porter, Herschel D.; and Taylor, Harold M., to Lilly, Eli, and Company. Method of killing helmiuths in warm-blooded animals with 1,1,3-trisubstituted thioureas and compositions thereof. 3,743,736, Cl. 424-267.000.
Post, Hendrik Alle; and Ong, Daniel, to U.S. Philips Corporation. Hypodermic syringe with radially movable blocking elements. 3,742,948, Cl. 128-218.00f.
Potter, Robert Louis: *See—*
Chase, John Donald; and Potter, Robert Louis, 3,743,708.
Powell, Edgar S., Jr. String of beads having plural rows with differently oriented bores. 3,742,730, Cl. 63-2.000.
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Pefferman, William C., 3,742,612.
Pratt, Harold J., Jr.: *See—*
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Precision Engineering Company (Reading) Limited: *See—*
Krain, Harry Wolfgang, 3,742,786.
Preti, Jean, to Societe de Fabrication d'Instruments de Mesure/S.F.I.M. Wave guide. 3,743,933, Cl. 325-24.000.
Preuss, Heinz, to Pilot-Hydraulic GmbH. Audio-visual playback apparatus and a sound and picture disc adapted therefor. 3,743,395, Cl. 352-103.000.
Price, H. C., Co.: *See—*
Bickham, Francis L., 3,743,470.
Price, Robert S., to Irvin Industries Inc. Reversible air supported structure. 3,742,657, Cl. 52-2.000.
Priest, Edward D., to Parker Manufacturing Company. Ratchet wrench. 3,742,788, Cl. 81-61.000.
Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; and Katsai, Margarita Yakovlevna. Method of preparing synthetic diamonds. 3,743,703, Cl. 423-446.000.
Prince, Arthur E., Jr., to Celanese Corporation. Process and apparatus for washing residual solvent from as-spun polybenzimidazole continuous filamentary materials. 3,743,479, Cl. 8-151.200.
Printy, Helen C.: *See—*
Baltazzi, Evan S.; and Printy, Helen C., 3,743,509.
Probat-Werke vonGimborn & Co., KG: *See—*
vonGimborn, Carl Hans, 3,742,613.
Procter & Gamble Company: *See—*
Nicholson, Allan D.; and Campbell, Darrel, 3,743,688.
Procter & Gamble Company, The: *See—*
Rizzi, George P.; and Neely, James S., 3,743,716.
Zamora, Pablo Perez, 3,743,534.
Progil: *See—*
Makula, Daniel; Druet, Monique; and Gonthier, Beatrice, 3,743,641.
Promecam Sisson-Tekmann: *See—*
Cailloux, Paul, 3,742,801.
Pullman Incorporated: *See—*
Hutchison, John W., 3,743,109.
Schmitz, Thomas R.; and Branson, Theodore A., 3,742,867.
Pullman Transport Leasing Company: *See—*
Adler, Franklin P., 3,742,865.
Punako, Stephen; and Swanson, George J., to Bendix Corporation, The. Plastic cable support. 3,742,559, Cl. 24-73.000.
Pyzel, Ewald D. Anti-theft device for skis. 3,742,740, Cl. 70-58.000.
Queensbury Opal Co., Ltd.: *See—*
Phillips, Michael R.; and Ludwig, Jerome H., 3,742,731.
Questor Corporation: *See—*
Hardick, Alden; Martin, Alvin M.; and House, Delbert, 3,742,575.
Quinn, Ronald E., to General Motors Corporation. Regenerative gas turbine system. 3,742,702, Cl. 60-39.230.
Rabodzei, Nikolai Vasilievich; Ljubimou, Evgeny Mikhailovich; and Nadobnikov, Mikhail Nikolaevich. Closed-circuit TV inspection X-ray microscope. 3,743,845, Cl. 250-360.000.
Rack Engineering Company: *See—*
Saul, Samuel, Jr.; and Colbridge, Thomas D., 3,743,115.
Raffaelli, Joseph Gino; and Palmer, Reed Albert, to International Telephone and Telegraph Corporation. Method of making an electrical apparatus. 3,742,601, Cl. 29-611.000.
Raimondi, Albert A., to Westinghouse Electric Corporation. Journal bearing. 3,743,367, Cl. 308-122.000.
Rainbow-Lifegard Products, Inc.: *See—*
Martinez, Daniel G., 3,743,280.
Rajcevic, Harold P.: *See—*
Cusanelli, Dominic C.; Coffin, Lamar D.; and Rajcevic, Harold P., 3,743,501.
Ramqvist, Lars Henry, to Rederiaktiebolaget Nordstjernan. Method of enlarging the particle size of transition metal powder and carbides thereof. 3,743,499, Cl. 75-.5bb.
Ramsay, Ray D., to Phillips Petroleum Company. Method for rendering difficulty dyeable material or fabric dyeable and product. 3,743,529, Cl. 117-21.000.
Ramsey, James B.; and Anderson, Paul T., to Westinghouse Electric Corporation. Thermally responsive electrical control device for polyphase currents. 3,743,992, Cl. 337-48.000.
Rancourt, Arthur J. Core chuck. 3,743,203, Cl. 242-68.400.
Randall, Richard L., to North American Rockwell Corporation. Thermal flowmeter. 3,742,761, Cl. 73-204.000.
Randall, Robert Scott; and Tengelsen, Ralph Arnold, to Bell Telephone Laboratories, Incorporated. Latching switch. 3,743,977, Cl. 337-77.000.
Ranieri, Louis F. Self-contained, multi-blade package. 3,742,805, Cl. 83-662.000.
Rank Organisation Limited: *See—*
Western, Michael Christopher Ian, 3,743,560.
Rankin, Carol Dean: *See—*
Lawing, Burmah D.; and Rankin, Carol Dean, 3,742,676.
Rao, Ramesh P., to Fiberglas Canada Ltd. Process for making silicate foams from alkali metal silicates. 3,743,601, Cl. 252-62.000.
Rasmussen, Jerome J. M., to Union Carbide Corporation. Coated fibrous sausage casing. 3,743,521, Cl. 99-176.000.
Rathbun, Willard J., to Foster Grant Co., Inc. Lid and container. 3,743,133, Cl. 220-60.00r.
Ratliff, Richard L.: *See—*
Howard, Wayne R.; and Ratliff, Richard L., 3,743,070.
Rauch, Martin: *See—*
Klunker, Heinz; and Rauch, Martin, 3,743,895.
Raychem Corporation: *See—*
Reeder, Larry R., 3,743,748.
Rayette-Faberge, Inc.: *See—*
Stohr, Christian; Grohmann, Klaus; and Wagner, Siegbert O., 3,743,557.
Raymakers, Adrianus Marinus: *See—*
Dirne, Adrianus Petrus; and Raymakers, Adrianus Marinus, 3,742,578.
Raytheon Company: *See—*
Bingley, Donald W., 3,743,919.
RCA Corporation: *See—*
Bridgewater, Thomas Austin, 3,743,944.
Russell, John Patrick, 3,743,376.
Sen Ih, Charles Chung; and Lurie, Michael Jay, 3,743,507.
Sheffield, Berthold, 3,743,974.
Smith, Allan Marshall, 3,743,824.
Steudel, Goetz Wolfgang, 3,743,923.
Steudel, Goetz Wolfgang, 3,743,960.
Vossen, John Louis, 3,743,586.
Wittmann, Erwin Johann, 3,743,764.
Rebucci, Eugene L., to Merrick Scale Mfg. Company. Mechanism for electrically transmitting the speed of travel of a conveyor belt. 3,743,913, Cl. 318-327.000.
Rederiaktiebolaget Nordstjernan: *See—*
Ramqvist, Lars Henry, 3,743,499.
Redhead, Paul A., to Canadian Patents and Development Limited. Hot cathode ionization gauge having electrode means for shaping the electric field in the vicinity of the cathode. 3,743,876, Cl. 373-7.000.
Reding, Gerald J. Overhead storage bin. 3,742,664, Cl. 52-194.000.
Redmore, Derek, to Petrolite Corporation. Inhibiting scale with nitrogen-heterocyclic phosphonic acids. 3,743,603, Cl. 252-180.000.
Reed, David Robert: *See—*
Downer, John Douglas; Skinner, Ronald Maurice; Reed, David Robert; and Hope-Ross, Donald Patrick, 3,743,673.
Reeder, Larry R., to Raychem Corporation. Device for terminating a shielded cable to a printed circuit board and method of connecting a shielded cable to a printed circuit board utilizing the same. 3,743,748, Cl. 174-75.00c.
Reel/Jack, Inc.: *See—*
Misrach, Richard, 3,743,205.
Refac Technology Development Corporation, mesne: *See—*
Demarest, Philip C., 3,743,880.
Regents of the University of California, The: *See—*
Steinhardt, Richard A., 3,743,591.
Regie Nationale des Usines Renault: *See—*
Reilhac, Andre; and Soetaert, Guy, 3,743,335.
Reigler, Harald: *See—*
Muller, Jupp; and Reigler, Harald, 3,743,829.
Reilhac, Andre; and Soetaert, Guy, to Regie Nationale des Usines Renault and Automobiles Peugeot. Lock with a staple-type bolt. 3,743,335, Cl. 292-127.000.
Reimer, William A.: *See—*
Bennett, Joseph C.; Reimer, William A.; and Winters, Hilary M., 3,742,574.
Reinhardt, Alberta C. Restraining device. 3,742,945, Cl. 128-134.000.
Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Processing of finely divided particulate materials. 3,742,566, Cl. 29-132.000.
Reiter Industries, Inc.: *See—*
Reiter, Jerome A., 3,743,251.
Reiter, Jerome A., to Reiter Industries, Inc. Tank agitating and cleaning system. 3,743,251, Cl. 259-18.000.
Reliable Electric Company: *See—*
Baumbach, Bertram W., 3,743,888.
Reliance Electric Company: *See—*
Hall, Donivan L.; Lauer, Robert J.; and Robazskiewicz, Gerald D., 3,743,057.
Relief-Technik GmbH: *See—*
Knoll, Ernst, 3,742,620.
Rem Metals Corporation: *See—*
Brown, Robert A., 3,743,003.
Renaut, Paul W.: *See—*
Bridges, Robert O.; and Renaut, Paul W., 3,743,927.

Rencin, Miloslav; Mladek, Milos; and Bures, Ladislav, to Elitex, zavody Textilniho Strojirenstvi. Pawl clutch. 3,743,065, Cl. 192-20.000.

Rendine, Michael J. Variable lift hydraulic valve lifter. 3,742,921, Cl. 123-90.160.

Rene Blaser, Hebe-und Maschinenbau, Firma: *See—*
Giessler, Horst; Lorenz, Klaus; Brutschin, Gerhard; and Walti, Marc, 3,743,116.

Renskers, John O.; Liebman, Charles S.; Salzman, Robert J.; and Schroeder, Charles E., to Coilcraft, Inc. Inductor with mounting means. 3,743,990, Cl. 336-192.000.

Rerolle, Paul: *See—*
Verreyne, Abraham Jacob; Job, Leonard Austin; Rerolle, Paul; and Richter, Johan Christoffer Carl, 3,742,735.

Research Corporation: *See—*
Comeau, Andre; Roeloes, Wendell; Tette, James; and Taschenberg, Emil Frederick, 3,743,718.

Research Frontiers Incorporated: *See—*
Lowell, Francis C., 3,742,600.
Rosenberg, Paul, 3,743,382.

Reser, George L.; and Riesz, Frederick R., to Sybron Corporation. Tomographic X-ray system with a movable table. 3,743,843, Cl. 250-320.000.

Rethmeier, Gerhard, to Anker-Werke AG. Control device for totalizing mechanisms of registering business machines. 3,743,178, Cl. 235-60.0mt.

Reudink, Douglas Otto John: *See—*
Gans, Michael James; and Reudink, Douglas Otto John, 3,743,941.

Rex Chainbelt Inc.: *See—*
Jennings, Paul; and Miller, Delmar S., 3,742,673.

Reynolds, Blake: *See—*
Marion, Charles P.; and Reynolds, Blake, 3,743,606.

Reynolds, Harry R., 10% to Lee, Raymond, Organization, Inc., The. Golf tee. 3,743,298, Cl. 273-204.000.

Reynolds, R. J., Company: *See—*
Waller, Charles R., 3,742,961.

Rheinmetall GmbH: *See—*
Gampe, Egon, 3,743,466.

Rhodes, Robert V.: *See—*
Rhodes, Robert V.; and Freeman, Charles D. (said Freeman assor. to said), 3,743,284.

Rhodes, Robert V.; and Freeman, Charles D., said Freeman assor. to said Rhodes, Robert V. Arm wrestling device. 3,743,284, Cl. 273-1.00r.

Rhone-Poulenc S.A.: *See—*
Sausse, Andre, 3,743,097.

Riccio, Katherine Delia, to Consolidated International Chemical Co. Inc. Convertible package. 3,743,170, Cl. 229-33.000.

Rice, Warren Albert: *See—*
Vinton, Clarence Samuel; and Rice, Warren Albert, 3,743,692.

Richardson, Edwin A.: *See—*
Suman, George O., Jr.; Murphey, Carey E., Jr.; Richardson, Edwin A.; and Torrest, Robert S., 3,743,020.

Richdel, Inc.: *See—*
Merriner, Delbert L.; and Miller, Woodrow W., 3,743,240.

Richert, Wilbert K., to Burt, F. N., Company, Inc. Individual tablet dispensing package. 3,743,085, Cl. 206-42.000.

Richter, Johan C. F. C., to Klamyr Aktiebolag. Screw feeder in a continuous cellulose digester. 3,743,572, Cl. 162-246.000.

Richter, Johan Christoffer Carl: *See—*
Verreyne, Abraham Jacob; Job, Leonard Austin; Rerolle, Paul; and Richter, Johan Christoffer Carl, 3,742,735.

Ridding, Michael John, to Alfa-Laval AB. Gate for animal enclosure. 3,742,910, Cl. 119-27.000.

Riechmann, Wilhelm. Proximity switch. 3,743,865, Cl. 307-308.000.

Riedl, H. Raymond; and Scharnhorst, Peter, to United States of America, Navy. Two color detector. 3,743,995, Cl. 338-15.000.

Riegger, Paul Charles. Device for unwinding and winding webs of material from or on to spools. 3,743,206, Cl. 242-75.100.

Rieschel, Hans: *See—*
Wenzel, Jorg; and Rieschel, Hans, 3,742,817.

Riesz, Frederick R.: *See—*
Reser, George L.; and Riesz, Frederick R., 3,743,843.

Riggs, William A., to Shell Oil Company. Light transmission monitor. 3,743,430, Cl. 356-207.000.

Rigterink, Raymond H., to Dow Chemical Company, The. Substituted (trifluoromethyl)-pyridyl phosphate and phosphorothioates. 3,743,648, Cl. 260-294.80k.

Riker Laboratories, Inc.: *See—*
Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,743,659.

Rinehart, Dean C., to General Electric Company. Rotary compressor. 3,743,454, Cl. 416-248.000.

Ring, Stuart H.: *See—*
Sewell, John M.; Matteson, Lawrence J.; and Ring, Stuart H., 3,742,833.

Risch, Rudolf, to Brown, Boveri & Company Limited. Apparatus for monitoring the air gap in rotary electrical machines using magnetic field plates or magneto diodes. 3,743,934, Cl. 324-34.00e.

Ritchie, Lyle J., to Automatic Refuse Systems, Inc. Anti-shock reversing-drive screw actuator unit. 3,743,909, Cl. 318-282.000.

Ritter, Adolf; and Walser, Karl, to Hilti Aktiengesellschaft. Method of securing anchoring members in high-strength steel. 3,742,591, Cl. 29-525.000.

Rixen, Bruno. Apparatus and technique for moving objects particularly useful in water skiing. 3,743,278, Cl. 272-32.000.

Rizzi, George P.; and Neely, James S., to Procter & Gamble Company, The. Sweetening compositions containing aglyconic dihydrochalcones. 3,743,716, Cl. 424-49.000.

Rizzi, Joseph D.; and Fagan, Lloyd D., to Intersil Incorporated, mesne. Electrically alterable integrated circuit read only memory unit and process of manufacturing. 3,742,592, Cl. 29-574.000.

Rizzo, Anthony A.: *See—*
Morse, Robert E.; and Rizzo, Anthony A., 3,743,059.

Ro-Search, Incorporated: *See—*
Auberry, Horace R.; and Liebscher, Anton, 3,742,544.

Roatcap, Daniel A.: *See—*
Campbell, Robert L.; and Roatcap, Daniel A., 3,742,989.

Robazskiewicz, Gerald D.: *See—*
Hall, Donivan L.; Lauer, Robert J.; and Robazskiewicz, Gerald D., 3,743,057.

Roberg, Kurt W.; and Marotti, Ernest F., to Grace, W. R., & Co. Cassette album container. 3,743,081, Cl. 206-1.00r.

Roberts, George C.: *See—*
Sturman, Oded E.; and Roberts, George C., 3,743,266.

Robertshaw Controls Company: *See—*
Perkins, Charles H.; Brakebill, Harold G.; Goff, Earl; and Caldwell, Edward N., 3,743,180.

Robins, A. H., Company, Incorporated: *See—*
Helsley, Grover Cleveland, 3,743,645.

Robinson, Martin A.: *See—*
Franco, Nicholas B.; and Robinson, Martin A., 3,743,664.

Robinson Waxed Paper Company Limited, The: *See—*
Phipps, Raymond Harold, 3,743,562.

Rocco, William A.: *See—*
Wentorf, Robert H., Jr.; and Rocco, William A., 3,743,489.

Rodriguez, Juan A.: *See—*
Carpentier, Anthony L.; and Rodriguez, Juan A., 3,744,023.

Rodriguez, Rodolfo, to Miles Laboratories, Inc. Process for suppressing the tremor of Parkinson's syndrome. 3,743,732, Cl. 424-250.000.

Roeloes, Wendell: *See—*
Comeau, Andre; Roeloes, Wendell; Tette, James; and Taschenberg, Emil Frederick, 3,743,718.

Roesch, Carol; and Heinimann, Rene. Inertia switch with oscillating controller restrained against return to normal position. 3,743,803, Cl. 200-61.45r.

Rogers, William M.: *See—*
Kinsch, Anton H., Jr.; Rogers, William M.; and Lake, Robert A., 3,743,261.

Rogler, Walter; Lenz, Arnold; and Joch, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Process for dosing alkali and alkaline earth metals. 3,743,711, Cl. 423-646.000.

Rohm and Haas Company: *See—*
Emmons, William D., 3,743,626.

Rohr Industries, Inc.: *See—*
Timms, Richard H., 3,742,711.

Roland Offset-maschinenfabriken Faber & Schleicher AG: *See—*
Greiner, Harry M.; and Banfer, Hartwig, 3,742,849.

Roll, Robert H. Electro plating device. 3,743,590, Cl. 204-212.000.

Rolls-Royce Limited: *See—*
Andrews, Edward George David; Ward, Robert George; Holliday, John Bertram; and Hurst, James, 3,742,707.

Roodvoets, Roger J., to Laser Alignment, Inc. Method for laying a pipeline. 3,742,581, Cl. 29-407.000.

Roos, Gunther: *See—*
Wolters, Ernst; and Roos, Gunther, 3,743,614.

Roos, Robert R., to Mueller Co. Cored-out fitting for valves or the like. 3,743,327, Cl. 285-192.000.

Rosenberg, Paul, to Research Frontiers Incorporated. Method, material and apparatus for increasing and decreasing the transmission of radiation. 3,743,382, Cl. 350-160.000.

Rosenberg, Robert, to Bell Telephone Laboratories, Incorporated. Thin film ring lasers. 3,743,962, Cl. 331-94.500.

Rosenberger, Chester A., Jr., to FMC Corporation. Telescopic tow chain. 3,742,863, Cl. 104-172.0bt.

Rosenberger, Harold E., to Bausch & Lomb Incorporated. Dual power microscope. 3,743,377, Cl. 350-37.000.

Rosencrantz, Donald M., to United States of America, Navy. Deep sea brushless cummutator. 3,743,796, Cl. 191-12.20a.

Rosenthal, Louis A.: *See—*
Kabik, Irving; and Rosenthal, Louis A., 3,742,811.

Ross, John R.: *See—*
George, D'Arcy R.; and Ross, John R., 3,743,695.

Ross, Stephen T.: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,743,737.

Rossell, Allen J., to Burroughs Corporation. Full cycle synchronous-switching control circuit. 3,743,860, Cl. 307-252.0ua.

Roth, Helmut: *See—*
Graf, Max E.; Roth, Helmut; and Von Fahland, Jurgen W., 3,742,650.

Roth, Irving: *See—*
McCarthy, Stephen G.; Roth, Irving; and Stark, Edward W., 3,743,390.

Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A.; and Dilanni, Daniel, 3,743,075.

Rothschild, Barbara G. Passive restraint for vehicle passengers. 3,743,046, Cl. 180-82.00c.

Rowe, Russell L., to Carborundum Company, The. Abrasive throwing wheel distribution system. 3,742,651, Cl. 51-9.000.

Rowland-Hill, Edward William, to Sperry Rand Corporation. Axial flow combine harvester. 3,742,686, Cl. 56-12.900.

Rubenstein, David, to Chemstress Industries, Inc. Reinforced pipe. 3,742,985, Cl. 138-141.000.

Rudolph, Otfried: *See—*
Zimmermann, Hans; Rudolph, Otfried; and Kuhn, Wilfried, 3,742,847.

Ruggerone, Guiseffe, to Nasco, Inc. Storing. 3,743,372, Cl. 312-108.000.

Ruiterkamp, Willem: *See—*
Franssen, Nico Valentinus; Ruiterkamp, Willem; and Van der Pelt, Cornelis Johannes, 3,743,756.

Rundles, Charles H. Suprapubic catheter inserter. 3,742,958, Cl. 128-347.000.

Rupprecht, Charles F.: *See—*
Rupprecht, Charles F.; and Wiker, Frank, 3,742,794.

Rupprecht, Charles F.; and Wiker, Frank, to Binswanger Glass Co., mesne and Rupprecht, Charles F. Glass handling and cutting system. 3,742,794, Cl. 83-12.000.

Rusk, Gerald R.; and Koch, Robert E., to Freeman Supply Company, The. Wrench. 3,742,789, Cl. 81-90.00c.

Russ, Charles R.: *See—*
Annas, Nick S.; and Russ, Charles R., 3,743,762.

Russell, Diana. Surface watercraft. 3,742,887, Cl. 114-61.000.

Russell, Gordon D., to Johnson & Johnson. Nonwoven sponge fabric. 3,743,536, Cl. 117-138.500.

Russell, John Patrick, to RCA Corporation. Holographic beam coupler. 3,743,376, Cl. 350-3.500.

Russell, Lee E. Storage and shipping case. 3,743,167, Cl. 229-23.0bp.

Russell, Stanley L.; and Pommerening, Uwe A., to Stromberg-Carlson Corporation. Circuit for detecting the presence of other than one-bit-out-of-N bits. 3,744,024, Cl. 340-146.1ab.

Ruti Machinery Works Ltd., (formerly Caspar Honegger: *See—*
Strauss, Edgar, 3,742,986.

Ryffel, Kaspar: *See—*
Lys, Hans-Peter; and Ryffel, Kaspar, 3,743,690.

S.A. des Etablissements Roure-Bertrand Fils & Justin Dupont: *See—*
Teisseire, Paul Jose; and Gaefre, Andre Marc, 3,743,671.

Sada, Charles A.; and Katz, Yoram. Offshore loading buoy with hose reeling. 3,742,536, Cl. 9-8.00p.

Safford, Robert D.: *See—*
Karr, Gerald W.; Page, Robert E.; and Safford, Robert D., 3,743,199.

Sagawa, Takao: *See—*
Ando, Kunio; Oishi, Hideo; Sagawa, Takao; and Hirano, Seiji, 3,743,724.

Sagiryants, Nikolai Magdygovich: *See—*
Bondarenko, Vitaly Tikhonovich; Markin, Jury Nikandrovich; Voronov, Nikolai Stefanovich; Sagiryants, Nikolai Magdygovich; Salnikov, Ivan Ivanovich; and Petrenko, Konstantin Pavlovich, 3,742,749.

Saillard, Pierre, to Charbonnages de France. Installation for successively transmitting a call signal from a plurality of transmitters in turn. 3,743,937, Cl. 325-55.000.

Saito, Yasuhiro: *See—*
Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Tsjji, Shinzo; and Mitani, Takashi, 3,743,318.

Sakaguchi, Tadao: *See—*
Ohkawa, Masaaki; Matsuo, Masatoshi; Sakaguchi, Tadao; Sato, Syozi; and Momoi, Yoshikazu, 3,743,602.

Sakai, Kazuo: *See—*
Watanabe, Toshio; Higuchi, Ryoichi; Yamato, Akihiro; and Sakai, Kazuo, 3,743,657.

Saladin A.G.: *See—*
Saladin, Benno, 3,743,689.

Saladin, Benno, to Saladin A.G. Method for manufacturing shaped articles from fabric sections. 3,743,689, Cl. 264-92.000.

Salem Corporation: *See—*
Scharbrough, James A.; Wilt, Charles R., Jr.; and Solano, William E., 3,743,475.

Salnikov, Ivan Ivanovich: *See—*
Bondarenko, Vitaly Tikhonovich; Markin, Jury Nikandrovich; Voronov, Nikolai Stefanovich; Sagiryants, Nikolai Magdygovich; Salnikov, Ivan Ivanovich; and Petrenko, Konstantin Pavlovich, 3,742,749.

Salonimer, David J., to United States of America, Army. Homing missile system using laser illuminator. 3,743,216, Cl. 244-3.160.

Salsbury Laboratories: *See—*
Welch, Dean Earl; and Baron, Robert Richard, 3,743,745.

Salzman, Robert J.: *See—*
Renskers, John O.; Liebman, Charles S.; Salzman, Robert J.; and Schroeder, Charles E., 3,743,990.

Samuelsson, Karl-Erik, to Aktiebolaget Svenska Flaktfabriken. Arrangement at ventilation installations in rooms provided with exhaust air windows and lighted by a number of fittings. 3,742,837, Cl. 98-40.0dl.

Sanders Associates, Inc.: *See—*
Byers, James Otto, Jr., 3,742,980.
Byers, James Otto, Jr., 3,742,981.
Dale, John C., 3,744,017.

Sanders, Ray W.; and Harting, Stephen W., to Computer Transmission Corporation. Computer interface coding and decoding apparatus. 3,744,051, Cl. 340-347.0dd.

Sanderson, Michael D., to Wilkinson Sword Limited. Razor blades and methods of manufacture thereof. 3,743,551, Cl. 148-63.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Mori, Shigeru, 3,743,478.

Sando, Yoshikazu; and Mori, Shigeru, to Sando Iron Works Co., Ltd. Method for patterning thermoperforated figures. 3,743,478, Cl. 8-114.600.

Sandoz Ltd.: *See—*
Egli, Hermann; and Ulshofer, Hermann, 3,743,477.

Sandoz Ltd., a/k/a Sandoz AG: *See—*
Fleck, Fritz; and Schmid, Horst, 3,743,637.

Sandoz-Wander Inc.: *See—*
Houlihan, William J., 3,743,733.

Sanraku-Ocean Co., Ltd.: *See—*
Kitai, Atsuo; Tone, Hiroshi; and Ozaki, Asaichiro, 3,743,582.

Sanyo Electric Co., Ltd.: *See—*
Kitamura, Hitoshi, 3,742,771.

Sanza, Frank J.: *See—*
Hughes, Robert E.; Sanza, Frank J.; and Smith, Charles E., 3,743,402.

Sanza, Frank J., to Xerox Corporation. Transport assembly. 3,743,403, Cl. 355-3.000.

Sapolin Points, Inc.: *See—*
Eckart, Edmund Albert, Jr., 3,743,150.

Sasaki, Kenichi: *See—*
Hisatomi, Takashi; and Sasaki, Kenichi, 3,742,922.

Sasaki, Rokoru; and Miya, Toshio, to Holpe Kabushiki Kaisha. Ski boot toe fixture. 3,743,309, Cl. 280-11.35t.

Sassin, Wolfgang, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Duct system for low-temperature fluids and thermally isolated electrical conductors. 3,743,760, Cl. 174-15.00c.

Sato, Akira: *See—*
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Takashi, 3,743,517.

Sato, Jiro: *See—*
Komori, Shigehiro; Sato, Jiro; and Umezawa, Kazumi, 3,743,406.

Sato, Kenji, to Kitano, Yoshizo, mesne. Lathe. 3,742,791, Cl. 82-2.00d.

Sato, Masaaki, to Olympus Optical Co., Ltd. Electrical attachment device. 3,743,784, Cl. 179-1.0pc.

Sato, Masamichi: *See—*
Takahashi, Isoji; Sato, Masamichi; and Honjo, Satoru, 3,743,830.

Sato, Masayuki: *See—*
Hirata, Masao; Tarumi, Noriyoshi; and Sato, Masayuki, 3,743,609.

Sato, Ryoda. Resistance-type spot welding machine. 3,743,816, Cl. 219-86.000.

Sato, Syozi: *See—*
Ohkawa, Masaaki; Matsuo, Masatoshi; Sakaguchi, Tadao; Sato, Syozi; and Momoi, Yoshikazu, 3,743,602.

Sattler, Rolf W.: *See—*
Merz, William C.; Methlie, George J.; and Sattler, Rolf W., 3,743,545.

Sauerbrey, Charles A., to Diehl, G., Mateer Co. Filler apparatus with hopper and rotary feed mechanism for dispensing controlled volumes of materials. 3,743,140, Cl. 222-63.000.

Saul, Samuel, Jr.; and Colbridge, Thomas D., to Rack Engineering Company. Rack storage apparatus. 3,743,115, Cl. 214-16.40a.

Sausse, Andre, to Rhone-Poulenc S.A. Dialyzer. 3,743,097, Cl. 210-321.000.

Sawahara, Masao: *See—*
Nakazawa, Yoshiyuki; Tsuji, Nobuo; Sawahara, Masao; and Hinata, Nasanao, 3,743,510.

Saxton, Arthur L., to Esso Research and Engineering Company. Catalytic cracking process with maximum feed vaporization. 3,743,593, Cl. 208-55.000.

Sayer, William J. Method and apparatus for determining respiratory airway resistance. 3,742,939, Cl. 128-2.080.

Scaramucci, Domer. Apparatus for retaining in assembled condition a valve for use between flanges. 3,743,242, Cl. 251-152.000.

Scaramucci, Domer. Indexing stop of valve stem. 3,743,243, Cl. 251-288.000.

Schaefer, Hans F., Jr.; and Williams, Reade, to USM Corporation. Automatic work guidance mechanism. 3,742,879, Cl. 112-121.120.

Schaefer, Howard A., to Anchor Hocking Corporation. Fresnel aspheric lens. 3,743,385, Cl. 350-189.000.

Schaeufele, Herman J., to United McGill Corporation. Modular building panel having interlocking edge structure. 3,742,672, Cl. 52-594.000.

Schanzlin, Klein, & Becker Aktiengesellschaft: *See—*
Bach, Meinhard; and Urban, Friedrich, 3,743,302.

Scharbrough, James A.; Wilt, Charles R., Jr.; and Solano, William E., to Salem Corporation. Central shaft feeding for rotary hearth furnace. 3,743,475, Cl. 432-16.000.

Scharnhorst, Peter: *See—*
Riedl, H. Raymond; and Scharnhorst, Peter, 3,743,995.

Schebalin, Sergei, to Honeywell Inc. Unitary resistor and shunt. 3,743,997, Cl. 338-49.000.

Scheele, Wesley W., to FMC Corporation. Elevating platform transporter. 3,743,044, Cl. 180-41.000.

Scheinpflug, Hans: *See—*

Hoffmann, Hellmut; and Scheinpflug, Hans, 3,743,729.

Schenck, Carl, Maschinenfabrik GmbH, Firma: *See—*
Heiland, Manfred; and Huenlinger, Herwig, 3,743,268.

Schering AG: *See—*
Todt, Hans-Gunther; Clauss, Wolfgang; and Dahms, Wolfgang, 3,743,584.

Schering Aktiengesellschaft: *See—*
Laurent, Henry; Kerb, Ulrich; Kolb, Karl-Heinz; Wiechert, Rudolf; and Gerhards, Erich, 3,743,741.

Schering Corporation: *See—*
O'Donovan, John P., 3,743,744.
Walter, Lewis A., 3,743,731.

Schick, Frederick A., to Allis-Chalmers Manufacturing Company. Dozer with no bind tilt linkage. 3,743,032, Cl. 172-803.000.

Schindler, Claude, to ZYMA S.A. Dosing valve. 3,743,146, Cl. 222-446.000.

Schlapfer, Hans, to Ciba-Geigy Corporation. Optical brightener of the coumarinylstyryltriazole series. 3,743,639, Cl. 260-240.00d.

Schlarb, Charles S. Swivel unit for small rotary drilling rig. 3,743,325, Cl. 285-94.000.

Schloemann Aktiengesellschaft: *See—*
Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, 3,743,007.

Schlumberger Instruments et Systems: *See—*
Percher, Guy, 3,743,936.

Schlumberger Technology Corporation: *See—*
Davis, Billy W., 3,744,016.

Schmid, Horst: *See—*
Fleck, Fritz; and Schmid, Horst, 3,743,637.

Schmidt, Gunther; Engelhorn, Robert; and Leitold, Matyas, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions comprising an 11-aminoacetyl-5, 11-dihydro-6h-pyrido [2,3-b] [1,4] benzodiazepin-6-one. 3,743,734, Cl. 424-250.000.

Schmidt, Harold A.; and Howell, John C. Fuzing system for stabilized anti-tank ammunition. 3,742,857, Cl. 102-702.0sa.

Schmidt, Kenneth J., to General Trailer Company, Inc. Vehicle with self-contained load transfer system. 3,743,120, Cl. 214-38.0ba.

Schmidt, Ludwig. Screen changer. 3,743,101, Cl. 210-447.000.

Schmitt, Arthur Norman, to Western Geophysical Company of America. Seismic composition system. 3,744,019, Cl. 340-15.5gc.

Schmitz, Thomas R.; and Branson, Theodore A., to Pullman Incorporated. Railway container cushioned supporting structure. 3,742,867, Cl. 105-366.00d.

Schmitz, Willi, to Mittelrheinische Metallgiesserei H. Beyer KG. Reel construction. 3,743,208, Cl. 242-118.600.

Schneider, Fritz, to Impex-Essen GmbH. Cartridge-actuated fastener-driving tools. 3,743,159, Cl. 227-10.000.

Schneider, Jean-Claude, to Fabrique d'Horlogerie Chs. Tissot et Fils S.A. Balance for horology movements. 3,742,700, Cl. 58-107.000.

Schneider, Jos., & Co. Optische Werke: *See—*
Kirchhoff, Kurt, 3,743,414.

Schneider, Kenneth C.: *See—*
Tuckey, Charles H.; and Schneider, Kenneth C., 3,743,253.

Schneider, Maxwell H. Metatarsal pad. 3,742,627, Cl. 36-28.000.

Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft: *See—*
Schunemann, Hans-Bernard Bolza; and Wolfram, Karl-Heinz, 3,743,277.

Schner, Donald R., to Goodyear Aerospace Corporation. Guided missiles. 3,743,213, Cl. 244-3.100.

Schnier, Edward A., to ATO Inc. Grip-finger for applying labels. 3,743,565, Cl. 156-476.000.

Schnoring, Hildegard; and Schon, Nikolaus, to Bayer Aktiengesellschaft. Process for the production of microcapsules. 3,743,604, Cl. 252-316.000.

Scholemann Aktiengesellschaft: *See—*
Lichte, Albert, 3,743,541.

Schomaker, Henry C. Soldering jig. 3,743,271, Cl. 269-37.000.

Schomisch, Alois: *See—*
Bettermann, Dieter; and Schomisch, Alois, 3,742,614.

Schon, Nikolaus: *See—*
Schnoring, Hildegard; and Schon, Nikolaus, 3,743,604.

Schonfeld, Arnold; and Phillips, Edwin R., to Sperry Rand Corporation. Fluidic card handling device. 3,743,359, Cl. 302-2.00r.

Schor, Ferdinand William, to AMP Incorporated. Filtered connector with barrel spring contact. 3,743,979, Cl. 333-79.000.

Schor, Ferdinand William, to AMP Incorporated. Filter adaptor for printed circuit board connector. 3,744,001, Cl. 339-14.00r.

Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Air cooled extruder. 3,743,252, Cl. 259-191.000.

Schrader, Gerhard; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Lower alkyl-s-[1-bromopropyl-(2)-mercaptomethyl] (thiono) thiolphosphoric or phosphonic acid esters. 3,743,687, Cl. 260-948.000.

Schramm, Jurgen: *See—*
Krekow, Gerhard; Schramm, Jurgen; and Witter, Klaus, 3,743,411.

Schrenk, Walter J.; and Mounts, Lewis S., to Dow Chemical Company, The. Apparatus for coextrusion of multilayer sheet or films. 3,743,459, Cl. 425-131.000.

Schrepfer, Willy E.: *See—*
Honegger, Arthur; Schrepfer, Willy E.; and Kronfeld, Alan C., 3,744,040.

Schroeder, Charles E.: *See—*
Renskers, John O.; Liebman, Charles S.; Salzman, Robert J.; and Schroeder, Charles E., 3,743,990.

Schuchter, Johann: *See—*
Beck, Manfred; Schuchter, Johann; and Marwede, Gunter, 3,743,631.

Schuh, Peter Otto, to Bell Telephone Laboratories, Incorporated. Bridge biasing circuit for line powered amplifier. 3,743,956, Cl. 330-40.000.

Schulz, Werner: *See—*
Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,743,735.

Schumacher, Gunter: *See—*
Schumacher, Gustav, II; and Schumacher, Gunter, 3,742,690.

Schumacher, Gustav, II; and Schumacher, Gunter. Ground-engaging structure for the front cutting end of a harvester. 3,742,690, Cl. 56-313.000.

Schuman, Le Roy J.: *See—*
De Diemar, Ronald; and Schuman, Le Roy J., 3,743,193.

Schunemann, Hans-Bernard Bolza; and Wolfram, Karl-Heinz, to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft. Sheet-feeding device for printing machines. 3,743,277, Cl. 271-58.000.

Schwachhofer, Ghislain: *See—*
Pierrot, Francois; and Schwachhofer, Ghislain, 3,743,702.

Schwartz, Paul H., Jr.: *See—*
Beroza, Morton; McGovern, Terrence P.; Schwartz, Paul H., Jr.; and Hamilton, Donald W., 3,743,719.

Schwarz, Albert J.; and Misak, Richard A., to Imperial-Eastman Corporation. One-piece sleeve and nut coupling means. 3,743,324, Cl. 285-3.000.

Schwarze, Friedrich, to Berstorff, Hermann, Maschinenbau GmbH. Take-off mechanism for loosely withdrawing a web of sheeting from a driven roller. 3,743,156, Cl. 226-181.000.

Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; Pommer, Ernst Heinrich; and Mohr, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Triazine derivatives. 3,743,642, Cl. 260-249.600.

Schweiger, Richard J.: *See—*
Patterson, Clinton E.; and Schweiger, Richard J., 3,742,804.

Schweitzer, Earl O. Hydraulic control actuator. 3,742,713, Cl. 60-325.000.

Schweizerische Industrie-Gesellschaft: *See—*
Fluck, Rene, 3,743,118.

Schwenk, Kurt; and Hablitzel, Hermann, to Volkswagenwerk Aktiengesellschaft. Apparatus for molding undercut slots in motor vehicle body parts. 3,743,236, Cl. 249-150.000.

Schwind, Kurt C.: *See—*
Cushing, Charles J.; Schwind, Kurt C.; and Vander Neut, Richard D., 3,743,431.

Scientific & Educational Services, Inc.: *See—*
Severs, Richard K., 3,742,680.

SCM Corporation: *See—*
Ott, Robert E., 3,742,930.

Scopp, Irwin W.; and Cohen, Gerson. Contoured toothbrush. 3,742,549, Cl. 15-167.00r.

Scott, Myrsyl Walter; and Kloek, Arvid E., to Honeywell Inc. PN junctions in mercury cadmium telluride. 3,743,553, Cl. 148-188.000.

Scovill Manufacturing Company: *See—*
Kolmarx, Louis Edward, 3,742,998.

Scully, Daniel F., to Mallinckrodt Chemical Works. Cyanoethylation of aminophenols. 3,743,668, Cl. 260-465.00e.

Sczerba, Stanley T., to Pennsylvania Engineering Corporation. Thermocouple lance handling device. 3,742,763, Cl. 73-343.00r.

Seaberg, David H., to Case, J. I., Company. Loader bucket control linkage. 3,743,126, Cl. 214-776.000.

Seager, W. H., and Associates, Ltd.: *See—*
Seager, William Harold, 3,742,756.

Seager, William Harold, to Seager, W. H., and Associates, Ltd. Access duct for pipelines. 3,742,756, Cl. 73-67.80s.

Sealth Aero Marine: *See—*
Andrews, Weldon R., 3,743,336.

Seaman, Beverly A. H., to Dow Chemical Company, The. Emulsified hydrazine based fuel composition. 3,743,555, Cl. 149-36.000.

Sease, James W., to Parke, Davis & Company. Surgical drape. 3,742,944, Cl. 128-132.00d.

Sebest, Albert E.; and Smith, Frank W., to Mine Safety Appliances Company. Oxygen producing unit with cooled casing. 3,742,683, Cl. 55-261.000.

S.E.C. Corporation: *See—*
Lowenhaupt, Edward Harris, III; and Edmunds, Edward, Jr., 3,743,585.

Sedlak, Charles K., to Faustel, Inc. Adjustable teeth for gear slidably mounted on spline shaft. 3,742,778, Cl. 74-395.000.

Sedlak, Charles K., to Faustel, Inc. Registration adjustment mechanism. 3,742,850, Cl. 101-248.000.

Seeger, Robert W. Golf ball retriever. 3,743,338, Cl. 294-19.00a.

Seidenberg, Richard L.: *See—*
Aklin, George H.; and Seidenberg, Richard L., 3,743,386.

Seiling, Don W. Post assembly. 3,743,226, Cl. 248-156.000.

Seki, Kazunori: *See—*
Kazama, Toshio; and Seki, Kazunori, 3,742,975.

Sellari, Daniele, Jr., to International Telephone and Telegraph Corporation. Limiter for multi frequency voice receiver. 3,743,945, Cl. 328-28.

Sellari, Daniele, Jr.; and Frost, Horace K., to International Telephone and Telegraph Corporation. Threshold detector for a voice frequency receiver. 3,743,950, Cl. 328-151.000.

Seltzer, William, to Vineland Laboratories, Inc. Treatment of animal and fowl litter and feces. 3,743,496, Cl. 71-21.000.

Sen Ih, Charles Chung; and Lurie, Michael Jay, to RCA Corporation. Recording of a continuous tone focused image on a diffraction grating. 3,743,507, Cl. 96-81.000.

Senn, Gerald J.: *See—*
Senn, Thomas A.; and Senn, Gerald J., 3,743,346.

Senn, Thomas A.; and Senn, Gerald J. Folding camper extension. 3,743,346, Cl. 296-23.0mc.

Sennewald, Kurt; Vogt, Wilhelm; and Glaser, Hermann, to Knapsack Aktiengesellschaft. Palladium-gold catalyst. 3,743,607, Cl. 252-430.000.

Sensi, Piero: *See—*
Hengeller, Carlo; Lancini, Giancarlo; and Sensi, Piero, 3,743,635.

Sensonics, Inc.: *See—*
Abel, Donald J., 3,743,988.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Brochot, Claude, 3,742,962.

Servus Rubber Company, The: *See—*
Groothaert, Henry Edmond, 3,742,623.

Sesvignes, Francois: *See—*
Berth, Michel; Sesvignes, Francois; and Piaget, Claude, 3,743,899.

Seto, Eisuke: *See—*
Murayama, Masao; Seto, Eisuke; Okubo, Takashi; Morita, Iwao; and Dobashi, Itsuo, 3,743,666.

Severs, Richard K., to Scientific & Educational Services, Inc. Apparatus for separating particulate matter from a gaseous suspension. 3,742,680, Cl. 55-103.000.

Seversky Electronatom Corporation: *See—*
De Seversky, Alexander P., 3,742,681.

Sewell, John M.; Matteson, Lawrence J.; and Ring, Stuart H. System for optically encoding an item and verifying same. 3,742,833, Cl. 95-12.000.

Sexton, Eugene W., to Total Safe Systems, Inc. Safety cashier's window system and the like. 3,742,872, Cl. 109-19.000.

Seymour, Arthur F.: *See—*
Hilbert, Francis H.; and Seymour, Arthur F., 3,743,863.

Shah, Indravadan S., to Chemical Construction Corporation. Crystallization of NaCl from Mg Cl_2 solution. 3,743,483, Cl. 23-303.000.

Shah, Naren M.: *See—*
Lykken, Lowell O.; and Shah, Naren M., 3,743,221.

Shapiro, Eliezer Y., to Harris-Intertype Corporation. Character spacing system for phototypesetting. 3,742,825, Cl. 95-4.500.

Sharkova, Nina Mikhailovna: *See—*
Barkov, Nikolai Konstantinovich; Kucherova, Natalya Fedorovna; Kochetkov, Nikolai Konstantinovich; Zhukova, Izida Grigorievna; and Sharkova, Nina Mikhailovna, 3,743,740.

Sharman, Richard Arthur: *See—*
Loose, Peter William; and Sharman, Richard Arthur, 3,743,766.

Sharp, David L.; and Modeen, Douglas P., to United Aircraft Corporation. Printer/plotter sheet transport with web cutting means. 3,743,413, Cl. 355-29.000.

Shaver, Marvin Bruce, to Esminion Engineering Works, Limited Dominion Segmented gearing. . 3,742,779, Cl. 74-448.000.

Shaw, Barney Pirofsky. Safety chassis. 3,743,347, Cl. 296-35.00r.

Shaw, Geoffrey T.; and Parsons, Basil I., to Canadian Patents and Development Limited. Preparation of highly porous alumina. 3,743,709, Cl. 423-628.000.

Shaw Pipe Industries, Ltd.: *See—*
Jarvis, Harold F., 3,743,124.

Shealy, Noah A., to Clark Equipment Company. Limited-slip type differential with adjusting means. 3,742,783, Cl. 74-710.500.

Sheehan, John T.: *See—*
Bodanszky, Miklos; and Sheehan, John T., 3,743,628.

Sheets, Gene C. Coal dust removal and coal transportation system. 3,743,356, Cl. 299-18.000.

Sheffield, Berthold, to RCA Corporation. Antenna matching network utilizing an adjustable high-power inductor. 3,743,974, Cl. 333-17.000.

Sheffield Steel Products Limited: *See—*
Galley, Gerald Jack, 3,742,790.

Shell Oil Company: *See—*
Bradley, William B., 3,743,034.
Feenstra, Robijn; and Hinze, Julius U., 3,743,036.
Jobe, John D., 3,743,425.
McCauley, Thomas Vernon; Barnes, Herbert W.; and Suman, George O., Jr., 3,743,021.
Phillips, Ross F., 3,742,974.
Riggs, William A., 3,743,430.
Suman, George O., Jr.; Murphey, Carey E., Jr.; Richardson, Edwin A.; and Torrest, Robert S., 3,743,020.
Van Daalen, Francois, 3,743,249.

Shelley, Shelley W. Apparatus for fabricating units of moldable building material. 3,743,235, Cl. 249-121.000.

Sherrod, James A. Method and apparatus for transporting large mobile homes. 3,743,322, Cl. 280-400.000.

Sherry, Helen B.: *See—*
Hey, Ernest, 3,743,502.

Shih, Ten Fuh: *See—*
Chen, David T. V.; and Shih, Ten Fuh, 3,742,912.

Shilling, Wilbur L.: *See—*
Nowotny, Kurt A.; and Shilling, Wilbur L., 3,743,272.

Shimada, Hiromitsu; Kawado, Kenji; Nagoya, Yutaka; Toi, Toshio; and Yamauchi, Shunichi, to Nippon Air Brake Company, Ltd. System for disconnecting any desired car in a train. 3,743,111, Cl. 213-212.000.

Shinada, Toshio: *See—*
Miyake, Yasutomo; Shinada, Toshio; and Mogi, Takao, 3,743,968.

Shinpoch, Jack E. Smokeless incinerator. 3,742,873, Cl. 110-8.00r.

Shokite, Richard J.: *See—*
Byrne, James J.; Blackwell, Francis O., III; and Shokite, Richard J., 3,742,878.

Shulzhenko, Alexandr Alexandrovich: *See—*
Prikhna, Alexei Iosifovich; Shulzhenko, Alexandr Alexandrovich; and Katsai, Margarita Yakovlevna, 3,743,703.

Shvedchenko, Anton Antonovich: *See—*
Kozhevnikov, Sergei Nikolaevich; Cherevik, Jury Ivanovich; Tkachenko, Arkady Semenovich; Klimkovsky, Islav Mecheslavovich; Shvedchenko, Anton Antonovich; and Pljusnin, Vladimir Vasilievich, 3,742,751.

SI Handling Systems, Inc.: *See—*
Fahringer, Russell K., 3,742,860.

Siciliano, Anthony J., to Diamond International Corporation. Egg escalator belt assembly. 3,743,079, Cl. 198-193.000.

Sicree, Albert J.: *See—*
Arnold, Fred E.; Sicree, Albert J.; and Vandeusen, Richard L., 3,743,624.

Siegel, Edgar: *See—*
Horstmann, Walter; and Siegel, Edgar, 3,743,632.

Siegel, Emil: *See—*
Zettl, Herbert; and Siegel, Emil, 3,743,917.

Siegel, William A., to Fischer & Porter Company. Pneumatic force-balance transmitter. 3,742,969, Cl. 137-85.000.

Siemens Aktiengesellschaft: *See—*
Fleer, Otto; and Heubeck, Erich, 3,742,606.
Klunker, Heinz; and Rauch, Martin, 3,743,895.
Weiske, Wolfgang; and Vogt, Herbert, 3,743,896.

Sifford, Perry P., to United Aircraft Corporation. Thermal response shroud for rotating body. 3,742,705, Cl. 60-39.660.

Signetics Corporation: *See—*
Leuthold, Dale H., 3,743,856.

Simms Group Research and Development Limited: *See—*
Hodge, Peter Charles; and Frankl, George, 3,743,363.

Simon, James Louis: *See—*
Duff, Frank; and Simon, James Louis, 3,743,791.
Duff, Frank; and Simon, James Louis, 3,743,792.

Simon-Heesen N.V.: *See—*
Heesen, Theodorus Jacobus, 3,742,750.

Simons, Earl J.: *See—*
Magers, Paul E.; and Simons, Earl J., 3,742,952.

Simons, Willi; Grothe, Horst; Haselhuhn, Rolf; Koenig, Peter; and Brock, Klaus, to Schloemann Aktiengesellschaft and Concast AG. Continuous casting apparatus with inter-changeable pouring tubes. 3,743,007, Cl. 164-281.000.

Singer Company, The: *See—*
Eisenberg, Robert M., 3,743,754.
Heine, Martin W.; and Tullman, Edward J., 3,742,881.
Torres, John B., Jr., 3,742,621.
Vidovic, Nikola V., 3,743,770.

Singer, M. Leonard; and Woletz, Robert M. Typewriter swivel lock mount. 3,743,224, Cl. 248-23.000.

Sirrenberg, Walther: *See—*
Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, 3,743,735.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. G.m.b.H. Door closer. 3,742,553, Cl. 16-55.000.

Sitzler, Fred C., to Berg Electronics Inc. Zero force type connector block. 3,744,005, Cl. 339-75.0mp.

Skagerlund, Lars-Erik, to Aktiebolaget Bofors. Ranging system. 3,743,419, Cl. 356-5.000.

SKF Compagnie d'Applications Mecaniques: *See—*
De Lavalette, Pierre de Lacroix; and Hein, Daniel, 3,743,066.

SKF Industrial Trading and Development Company NV: *See—*
Langstrom, Hakon Olof Scheibe, 3,743,369.

SKF Kugellagerfabriken GmbH: *See—*
Speiser, Helmut, 3,742,694.

Skinner, Ronald Maurice: *See—*
Downer, John Douglas; Skinner, Ronald Maurice; Reed, David Robert; and Hope-Ross, Donald Patrick, 3,743,673.

Sklar, John. Towel clamp. 3,742,587, Cl. 29-434.000.

Skopal, Jan: *See—*
Paukert, Miloslav; and Skopal, Jan, 3,743,388.

Skulpone, Sunthorn: *See—*
Dittman, Kenneth C.; and Skulpone, Sunthorn, 3,743,853.

Sloan, Crawford J., to Dunlap, Forrest, Jr. Reclining chair and mechanism therefore. 3,743,348, Cl. 297-85.000.

Slusarczuk, George M. J.: *See—*
Brown, John F., Jr.; Slusarczuk, George M. J.; and LeBlanc, Oliver H., Jr., 3,743,588.

Smatlak, Charles J., to Westinghouse Electric Corporation. Durable transparent mask for photolithographical processing and method of making the same. 3,743,417, Cl. 355-125.000.

Smith, A. O., Corporation: *See—*
Lykes, Robert E., 3,742,595.

Smith, Allan Marshall, to RCA Corporation. Carry ripple network for conditional sum adder. 3,743,824, Cl. 235-175.000.

Smith, Charles E.: *See—*
Hughes, Robert E.; Sanza, Frank J.; and Smith, Charles E., 3,743,402.
Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. 1-Aminophospholene-1-oxides. 3,743,676, Cl. 260-551.00p.
Smith, Curtis R., to General Electric Company. Semiconductor device with positively beveled junctions and process for its manufacture. 3,742,593, Cl. 29-583.000.
Smith, Dallas F.; and Arnold, Richard B., to General Electric Company. Apparatus and method for forming shaped insulators and for developing coils and for inserting insulators and coils into a magnetic core. 3,742,596, Cl. 29-596.000.
Smith, David Harold, to Boeing Company, The. Vortex valve shock absorber. 3,743,222, Cl. 244-104.0fp.
Smith, Donald A.: *See—*
Dappen, Glen M.; and Smith, Donald A., 3,743,504.
Smith, Donald Arthur; and Copenhagen, Donald M., to Eastman Kodak Company. Photographic elements containing synthetic polymeric vehicles. 3,743,627, Cl. 260-78.40d.
Smith, Eric P., to Emergency Systems International Santee. Reversible life preserver. 3,742,538, Cl. 9-340.000.
Smith, Frank W.: *See—*
Sebest, Albert E.; and Smith, Frank W., 3,742,683.
Smith, Henry Ignatius; Spears, David Lewis; and Stern, Ernest, to Massachusetts Institute of Technology. Soft X-ray lithographic apparatus and process. 3,743,842, Cl. 250-320.000.
Smith, Hugh B., to Dow Chemical Company, The. Electrical insulation thermal softening detection device. 3,742,755, Cl. 73-15.00r.
Smith, James P., 50% to Manspeaker, Robert O. Drill jig apparatus. 3,743,433, Cl. 408-72.000.
Smith, Joseph E.; and De Troyer, Georges D., to Wolverine-Pentronix Inc. Thickness adjustment mechanism for press. 3,742,773, Cl. 74-53.000.
Smith, Joseph L., Jr., to Massachusetts Institute of Technology. High voltage oil insulated and cooled armature winding. 3,743,867, Cl. 310-52.000.
Smith, Joseph L., Jr.; and Kirtley, James L., Jr., to Massachusetts Institute of Technology. Polyphase synchronous alternators having a controlled voltage gradient armature winding. 3,743,875, Cl. 310-198.000.
Smith Kline & French Laboratories: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,743,737.
Smith, Orville L.: *See—*
Bettis, Edward S.; MacPherson, Herbert G.; Perry, Alfred M.; and Smith, Orville L., 3,743,577.
Smith, Richard E., to Xerox Corporation. Compensating cam for use in a copying machine for synchronizing the operation between a developer applicator and an imaging surface. 3,743,407, Cl. 355-10.000.
Smith, Stephen B., to National Cash Register Company, The. Microform reader cover plate opening mechanism. 3,743,399, Cl. 353-23.000.
Smith, William: *See—*
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,743,185.
Smith, William James: *See—*
Cichelli, Mario Thomas; Colley, David Ross; Etchellis, Arthur William, III; and Smith, William James, 3,743,694.
Smiths Industries Limited: *See—*
Constable, Geoffrey E. P.; and Lloyd, Dennis Arthur, 3,743,134.
Smolka, Thomas Gordon, to Wiener Metallwarenfabrik Smolka & Co. Sole support device. 3,743,310, Cl. 280-11.35e.
Snaplite Displays, Inc.: *See—*
Palm, Bernhard, 3,742,633.
Snedkerud, Ole, to Patelhold Patentverwertung- & Elektro-Holding AG. Amplifier circuit. 3,743,954, Cl. 330-10.000.
Snyder, Bobbie L.: *See—*
Polsky, Norman; Spencer, Ambrose; Pike, Daniel W.; Lieberman, Edgar M.; and Snyder, Bobbie L., 3,742,869.
Snyder, Herbert C.: *See—*
Poole, James P.; Snyder, Herbert C.; and Boschini, Mark A., 3,743,491.
Sobel, Alan, to Zenith Radio Corporation. Image display panel. 3,743,773, Cl. 178-7.300.
Sobottka, Stanley: *See—*
Thiessen, Henry A.; Sobottka, Stanley; and Lee, David M., 3,743,840.
Societa per L'Esercizio Dell'Istituto Sperimentale Metalli Leggeri: *See—*
Di Russo, Ettore; Buratti, Massimo; and Conserva, Mario, 3,743,549.
Societe Anonyme de Telecommunications: *See—*
Truck, Jean Paul, 3,743,217.
Societe Anonyme dite: L'Oreal: *See—*
Viout, Andre; and Papantoniou, Christos, 3,743,715.
Societe de Fabrication d'Instruments de Mesure/S.F.I.M.: *See—*
Preti, Jean, 3,743,933.
Societe des Accumulateurs Fixes et de Traction (Societe Anonyme): *See—*
Gabano, Jean-Paul, 3,743,546.
Societe des Aciers Fins de l'Est: *See—*
Pittoreau, Pierre, 3,743,078.
Societe d'Etudes de Machines Termiques: *See—*
Kuhn, Karl Walter, 3,742,927.
Societe en nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
Le Douarec, Jean-Claude; Beregi, Laszlo; and Hugon, Pierre, 3,743,739.
Societe General de Constructions Electrique et Mecaniques (Alsthom): *See—*
Vidal, Jean; Lugand, Paul Henri; Lemoine, Jacques; and Parisot, Jean, 3,742,708.
Societe Genevoise d'Instruments de Physique: *See—*
Calame, Michel, 3,742,610.
Societe Industrielle d'Electronique et d'Informatique: *See—*
Murtin, Fernand; Mercier, Loic; and Barat, Jean, 3,742,918.
Societe Rhodiaceta: *See—*
Grosjean, Pierre; and Vaginay, Yves, 3,743,685.
Soetaert, Guy: *See—*
Reilhac, Andre; and Soetaert, Guy, 3,743,335.
Sohmer, Murray. Lint sweeper. 3,742,547, Cl. 15-104.00a.
Solano, William E.: *See—*
Scharbrough, James A.; Wilt, Charles R., Jr.; and Solano, William E., 3,743,475.
Soloviev, Igor Nikolaevich: *See—*
Sukhov, Ivan Alexeevich; and Soloviev, Igor Nikolaevich, 3,742,815.
Sonia, John: *See—*
Patrick, Richard B.; and Sonia, John, 3,743,463.
Sonolet, Henri Claude. Assembling of tubular elements. 3,743,332, Cl. 287-54.00a.
Sony Corporation: *See—*
Takashino, Shizuo, 3,743,299.
Uemura, Saburo; and Iwamoto, Muneo, 3,744,027.
Sorbie, Thomas B., to Owens-Illinois, Inc. Article stabilizing deceleration gate. 3,743,074, Cl. 198-19.000.
Soul, Walter F. Optical and magnetic reader for film editing machines. 3,743,397, Cl. 352-129.000.
South African Pulp and Paper Industries Limited: *See—*
Verreyne, Abraham Jacob; Job, Leonard Austin; Rerolle, Paul; and Richter, Johan Christoffer Carl, 3,742,735.
Southwest Research Institute: *See—*
Wood, Charles D., III, 3,744,018.
Souza, Augustine A., to Noyce, Robert N., mesne. Pressure indicating bung with self-locking insertion feature. 3,742,898, Cl. 116-70.000.
Sowery, Jack S. Ladder supported hoist. 3,743,227, Cl. 248-210.000.
Sparks, Arnold F.: *See—*
Ackley, Kenneth E.; and Sparks, Arnold F., 3,743,172.
Spartanics, Ltd.: *See—*
Willits, Samuel P.; and Mohan, William L., 3,743,820.
Spear & Jackson (Ashberry) Limited: *See—*
Brumwell, Terence Jack, 3,742,602.
Spears, David Lewis: *See—*
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Spectra-Physics, Inc.: *See—*
Offner, Franklin F., 3,743,965.
Speiser, Helmut, to SKF Kugellagerfabriken GmbH. Spinning and twisting apparatus. 3,742,694, Cl. 57-132.000.
Speizmin Industries, Inc.: *See—*
Lawing, Burmah D.; and Rankin, Carol Dean, 3,742,676.
Spellman, Francis T., Jr., to Symons Corporation. Hydraulic turntable. 3,743,223, Cl. 248-2.000.
Spence, John R., to North American Rockwell Corporation. Two-clock memory cell. 3,744,037, Cl. 340-173.0ca.
Spencer, Ambrose: *See—*
Polsky, Norman; Spencer, Ambrose; Pike, Daniel W.; Lieberman, Edgar M.; and Snyder, Bobbie L., 3,742,869.
Spencer, Herman J. Fastener applying device. 3,743,161, Cl. 227-124.000.
Spencer, Joseph T.; deceased (by Nelson, Charles, Jr.; administrator). Combination bird shelter and feeder. 3,742,914, Cl. 119-52.000.
Sperry Rand Corporation: *See—*
Crutcher, James E.; and Davis, Lawrence P., 3,742,769.
Eves, Ellis E., II, 3,743,864.
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Lonnemo, Kurt R., 3,742,820.
Maloney, William T., 3,743,421.
McCarthy, Stephen G.; Roth, Irving; and Stark, Edward W., 3,743,390.
McMahon, Donald H., 3,743,379.
Rowland-Hill, Edward William, 3,742,686.
Schonfeld, Arnold; and Phillips, Edwin R., 3,743,359.
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Sprinter System of America, Ltd.: *See—*
Person, Rune, 3,743,169.
Squibb, E. R., & Sons, Inc.: *See—*
Bodanszky, Miklos; and Sheehan, John T., 3,743,628.
SRC Laboratories, Inc.: *See—*
Mocarski, Zenon R., 3,743,186.
St. Anne's Board Mill Company Limited: *See—*
Attwood, Brian William; and Curry, Harold George, 3,743,573.
Stainless, Inc.: *See—*
Glass, Marvin I.; Morrison, Howard J.; and Nix, Donald F., 3,742,875.

Stamicarbon N.V.: *See—*
Eurlings, Jacobus J.M.G.; Geus, John W.; and Weterings, Cornelis A.M., 3,743,662.
Standard Pressed Steel Co.: *See—*
Devlin, John O.; and Matievich, William, 3,742,583.
Stansbury, John H.: *See—*
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Stark, Edward W.: *See—*
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Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 3,743,728.
Gutman, Arnold D., 3,743,743.
Sumner, Clark A., 3,743,705.
Steelcase, Inc.: *See—*
Houtman, Richard L., 3,742,554.
Stefanec, Joseph L. Meatless sausage. 3,743,511, Cl. 99-1.000.
Steffen, Jurg; and Hofer, Arnold, to Watch Stones Co., Ltd. and Turlabor AG. Apparatus for inverting and coating a workpiece. 3,742,907, Cl. 118-314.000.
Steffin, Bernd: *See—*
Kneupel, Hans-Joachim; and Steffin, Bernd, 3,744,038.
Stehlik, Richard C. Raised seat platform. 3,742,529, Cl. 5-118.000.
Stehlin, Robert A., to United States of America, Air Force. Radiation hardening read preamplifier. 3,743,955, Cl. 330-22.000.
Steidle, Walter: *See—*
Goerlich, Bruno; Kubinyi, Hugo; and Steidle, Walter, 3,743,633.
Steiger, Edward L.: *See—*
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Stein Industrie: *See—*
Vidal, Jean; Lugand, Paul Henri; Lemoine, Jacques; and Parisot, Jean, 3,742,708.
Steinberg, Martin, to General Motors Corporation. Multichannel exhaust gas analyzer. 3,743,426, Cl. 356-96.000.
Steiner, Rudolf. Electric switch. 3,743,980, Cl. 335-205.000.
Steinhardt, Richard A., to Regents of the University of California, The. Ion-selective microelectrode. 3,743,591, Cl. 204-195.001.
Steinwart, Johannes, to Audi Nsu Auto Union Aktiengesellschaft and Wankel G.m.b.H. Rotor for a rotary combustion engine. 3,743,449, Cl. 418-39.000.
Steinwart, Johannes, to Audi Nsu Auto Union Aktiengesellschaft and Wankel G.m.b.H. Liquid cooling system for rotary piston engines. 3,743,452, Cl. 418-84.000.
Stellar Industries, Inc.: *See—*
Lian, John R.; and Pennila, Simo A. O., 3,742,685.
Stelling, William. Water-jet propulsion and steering system for a multisection prime-mover ship. 3,742,893, Cl. 115-12.00r.
Stephan, A., und Sohne: *See—*
Otto, Friedrich, 3,743,192.
Stern, Ernest: *See—*
Smith, Henry Ignatius; Spears, David Lewis; and Stern, Ernest, 3,743,842.
Stern, Theodore J. Cardiac pacer and heart pulse monitor. 3,742,938, Cl. 128-2.05t.
Steudel, Goetz Wolfgang, to RCA Corporation. Reference voltage generator and regulator. 3,743,923, Cl. 323-22.00r.
Steudel, Goetz Wolfgang, to RCA Corporation. Circuit for driving frequency standard such as tuning fork. 3,743,960, Cl. 331-1.00a.
Stevenson, Robert L. Urinal structure. 3,742,522, Cl. 4-10.000.
Stewart, Robert C., Jr., to United Aricraft Corporation. Fuel cell. 3,743,544, Cl. 136-86.00r.
Stiddard, Paul Thomas: *See—*
Baxter, John Keith; and Stiddard, Paul Thomas, 3,743,001.
Stifle, Jack: *See—*
Bitzer, Donald L.; Johnson, Michael; and Stifle, Jack, 3,743,767.
Stiller, Michael R.: *See—*
Stiller, William B.; and Stiller, Michael R., 3,743,389.
Stiller, William B.; and Stiller, Michael R. Combination mirror and transparent case therefor. 3,743,389, Cl. 350-288.000.
Stinson Aircraft, Inc.: *See—*
Stinson, William E., 3,743,220.
Stinson, William E., to Stinson Aircraft, Inc. Leading edge flap mechanism. 3,743,220, Cl. 244-42.0ca.
Stoeffler, Richard C.: *See—*
Mensing, Arthur E.; Clark, James W.; and Stoeffler, Richard C., 3,743,095.
Mensing, Arthur E.; and Stoeffler, Richard C., 3,743,102.
Stohr, Christian; Grohmann, Klaus; and Wagner, Siegbert O., to Rayette-Faberge, Inc. Brush and method of manufacture. 3,743,557, Cl. 156-72.000.
Stoneham, Jeffrey R.; and Adams, Benjamin B., III, to Eastman Kodak Company. Apparatus for receiving a battery holder. 3,742,832, Cl. 95-11.00r.
Stonestrom, Donald M., to ICI America Inc. Sensor-detonator module. 3,742,858, Cl. 102-70.20r.
Stoody Company: *See—*
Woods, Marion D., 3,743,815.
Storage Technology Corporation: *See—*
Carpentier, Anthony L.; and Rodriguez, Juan A., 3,744,023.
Stotesbery, Gerald L. Protective device for snowmobiles. 3,743,316, Cl. 280-150.000.
Stoyanovitch, Dragoslav S. Anti-theft device for motor vehicles. 3,742,743, Cl. 70-209.000.
Strabruken AB: *See—*
Andersson, Lennart, 3,743,524.
Stratton, George B.: *See—*
Geering, Emil J.; and Stratton, George B., 3,743,680.
Strauss, Edgar, to Ruti Machinery Works Ltd., (formerly Caspar Honegger. Device for forming coils of thread. 3,742,986, Cl. 139-12.000.
Streeter, Edward C., Jr. Pivot suspension for ribbon-like louver. 3,742,648, Cl. 49-74.000.
Strickland, Alvah T., to United States of America, Navy. Buoyancy transport vehicle control console. 3,742,884, Cl. 114-.50r.
Strickland, Alvah T., to United States of America, Navy. Diver operated hand control system for an underwater vehicle. 3,742,885, Cl. 114-16.00a.
Strickland, Frederick W. Snake bite kit. 3,742,954, Cl. 128-302.000.
Strickland, Nathaniel. Wind driven power producing apparatus. 3,743,848, Cl. 290-55.000.
Strobert, Samuel S., to FMC Corporation. Continuous sphering apparatus. 3,743,464, Cl. 425-222.000.
Stromberg-Carlson Corporation: *See—*
Russell, Stanley L.; and Pommerening, Uwe A., 3,744,024.
Strong, Jerry G., to Mobil Oil Corporation. Preparation of 2-alkyl-4-oxo-2,3,4,5,6,7-hexahydrobenzo [b]thiopenes. 3,743,655, Cl. 260-332.30p.
Struck, Charles R. Battery powered implement and circuit control therefor. 3,743,915, Cl. 320-2.000.
Struger, Odo J., to Allen-Bradley Company. Fault detecting and fault propagating logic gate. 3,743,855, Cl. 307-215.000.
Strumbos, William P. Multiple heat range spark plug. 3,743,877, Cl. 313-11.500.
Strycker, Wallace Glenn: *See—*
Buckler, Robert Thomas; and Strycker, Wallace Glenn, 3,743,646.
Stucchi, Richard F.: *See—*
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Stump, Ronald C.: *See—*
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Sturgeon, Edward G., to Syncro Corporation. Electric brake controller. 3,743,998, Cl. 338-96.000.
Sturman, Oded E.; and Roberts, George C., to Inca Manufacturing Corporation. Energy absorbing isolation system. 3,743,266, Cl. 267-31.000.
Sturman, Oded Eddie. Latching actuators. 3,743,898, Cl. 317-154.000.
Suda, Seiji, to Hitachi, Ltd. Injection type fuel feeder. 3,742,919, Cl. 123-32.0ea.
Suganuma, Burou: *See—*
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Sugisaka, Nobuyuki: *See—*
Klohs, Murle W.; Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,743,659.
Sukhov, Ivan Alexeevich; and Soloviev, Igor Nikolaevich. Method of machining grooves in rolls of hot pilger mills. 3,742,815, Cl. 90-11.00c.
Sullivan, Daniel Andrew, Jr. Bicycle gear shift repair. 3,742,580, Cl. 29-401.000.
Sullivan, Joseph F., 1/2 to Mueller, Donald J. Display and dispensing assembly. 3,743,371, Cl. 312-42.000.
Sulzer Brother Limited: *See—*
Kaelin, Werner, 3,742,567.
Sulzer Brothers Limited: *See—*
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Suman, George O., Jr.: *See—*
McCauley, Thomas Vernon; Barnes, Herbert W.; and Suman, George O., Jr., 3,743,021.
Suman, George O., Jr.; Murphey, Carey E., Jr.; Richardson, Edwin A.; and Torrest, Robert S., to Shell Oil Company. Consolidating perforation channel walls. 3,743,020, Cl. 166-292.000.
Sumitomo Chemical Co., Ltd., mesne: *See—*
Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Ooba, Shigehiro; Tanaka, Katsutoshi; Nodera, Katsuji; Ooishi, Tadashi; and Kameda, Nobuyuki, 3,743,651.
Sumitomo Chemical Company, Ltd.: *See—*
Ohkawa, Masaaki; Matsuo, Masatoshi; Sakaguchi, Tadao; Sato, Syozi; and Momoi, Yoshikazu, 3,743,602.
Sumitomo Metal Industries, Limited: *See—*
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Sumitomo-Chemical Company, Ltd.: *See—*
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Summa, Frank A. Sno-go. 3,742,997, Cl. 152-233.000.
Sumner, Clark A., to Stauffer Chemical Company. Process of recovering copper values. 3,743,705, Cl. 423-561.000.
Sun Graphic Systems, Inc.: *See—*
Patrick, Richard B.; and Sonia, John, 3,743,463.
Sun Oil Company (Delaware): *See—*
Bennett, John D., 3,743,038.
Superior Concrete Accessories, Inc.: *See—*
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Sweco, Inc.: *See—*
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Sweeney, Thomas E.: *See—*
Sweeney, Thomas E.; Condit, Philip M.; Ormiston, Robert A.; and Nixon, Walter Barry, 3,743,218.
Sweeney, Thomas E.; Condit, Philip M.; Ormiston, Robert A.; and Nixon, Walter Barry, to Sweeney, Thomas E. Semi-rigid airfoil for airborne vehicles. 3,743,218, Cl. 244-36.000.
Swenson, Paul F., Sr., to Great Lakes Sports Mfg. Co. Metal forming method and apparatus. 3,742,745, Cl. 72-54.000.
Swett, James B.: *See—*
Croyle, Jack V.; and Swett, James B., 3,743,131.
Swillinger, Francis L., to Libbey-Owens Ford Company. Apparatus for producing float glass. 3,743,495, Cl. 65-182.00r.
Swiss Aluminium Ltd.: *See—*
Maier, Bruno, 3,742,752.
Sybron Corporation: *See—*
Reser, George L.; and Riesz, Frederick R., 3,743,843.
Symons Corporation: *See—*
Spellman, Francis T., Jr., 3,743,223.
Syncro Corporation: *See—*
Sturgeon, Edward G., 3,743,998.
Szekely, Andrew Geza, to Union Carbide Corporation. Apparatus and process for refining molten aluminum. 3,743,263, Cl. 266-34.00a.
Tabler, Donald C.: *See—*
Johnson, Marvin M.; and Tabler, Donald C., 3,743,684.
Takada, Toshio: *See—*
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 3,743,707.
Takahashi, Isoji; Sato, Masamichi; and Honjo, Satoru, to Xerox Corporation. Device for uniformly charging a non-planar electrophotographic plate. 3,743,830, Cl. 250-325.000.
Takahashi, Kazuo: *See—*
Habu, Teiji; Yoshida, Kyusaku; Hirao, Yotaro; and Takahashi, Kazuo, 3,743,608.
Takahashi, Suyoshi: *See—*
Hiratsuka, Ken-Ichi; Kawakami, Daizo; Kaneko, Haruo; and Takahashi, Suyoshi, 3,743,786.
Takashino, Shizuo, to Sony Corporation. Cassette tape recording and reproducing apparatus. 3,743,299, Cl. 274-4.00c.
Takeda Chemical Industries, Ltd.: *See—*
Kodama, Reijiro; Nakasuji, Yugoro; and Yamada, Nobuhiro, 3,743,723.
Naito, Kenji; Ogino, Katsuhiko; Okudo, Hiroshi; Tanaka, Michio; Kamatani, Yoshio; Mukai, Hiroshi; and Takeuchi, Tatsuro, 3,743,665.
Takei, Haruo: *See—*
Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Takashi, 3,743,517.
Takenaka, Shigeo; Goshi, Seiji; and Itaka, Kazuhiko, to Tokyo Shibaura Electric Co., Ltd. Magnetic convergence device for use in an in-line type color cathode ray tube. 3,743,984, Cl. 335-212.000.
Takeno, Syozo: *See—*
Higashinakagawa, Iwao; Nakagawa, Takashi; Ogawa, Takenobu; Takeno, Syozo; and Yasuda, Nobuaki, 3,744,041.
Takeuchi, Masahiro: *See—*
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Takeuchi, Tatsuro: *See—*
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Takeuchi, Tomio: *See—*
Umezawa, Hamao; Kondo, Shinichi; Maeda, Kenji; Takeuchi, Tomio; and Hamada, Masa, 3,743,580.
Takimoto, Masaaki: *See—*
Honjo, Satoru; Takimoto, Masaaki; and Kasugai, Tsuneo, 3,743,537.
Talbert, Wayne Mason, to Union Carbide Corporation. Close clearance viscous fluid seal system. 3,742,822, Cl. 92-86.000.
Talmon, Floyd H.: *See—*
Confer, Raymond C.; and Talmon, Floyd H., 3,742,995.
Tamasi, Nick J., to Douglas Machinery Co. Engine heater monitor and control system. 3,744,046, Cl. 340-253.00r.
Tamogawa Kikai Kinzoku Kabushiki Kaisha: *See—*
Kazama, Toshio; and Seki, Kazunori, 3,742,975.
Tanabe Seiyaku Co., Ltd.: *See—*
Watanabe, Toshio; Higuchi, Ryoichi; Yamato, Akihiro; and Sakai, Kazuo, 3,743,657.
Tanaka, Katsutoshi: *See—*
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Fujinami, Akira; Ozaki, Toshiaki; Akiba, Keiichiro; Yamamoto, Sigeo; Nodera, Katsuji; Tanaka, Katsutoshi; and Ooishi, Tadashi, 3,743,654.
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Tanoue, Toyosuke; and Akamatsu, Kyoichi, to Sumitomo Metal Industries, Limited. Rotary drum type continuous refining furnace. 3,743,265, Cl. 266-36.00h.
Tarantino, Rocco J.; and Yeiser, John O. Cassette for strip chart recorders. 3,743,201, Cl. 242-67.300.
Tarbox, John W.; and Zimmermann, Wilfried, to Hughes Aircraft Company. Pin alignment apparatus. 3,742,987, Cl. 140-147.000.
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Tazaki, Michiharu, to Kyoeikogyo Kabushikikaisha. Drawer suspension apparatus. 3,743,366, Cl. 308-3.800.
TDK Electronics Company Ltd.: *See—*
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Teske, Fritz; Teske, Lothar; and Dreismann, Robert, to Maschinenbau Louise GmbH. Device for clearing fluent material from bunker type storage containers. 3,743,119, Cl. 214-17.0da.
Teske, Lothar: *See—*
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Thoenen, Earl R., to Polaroid Corporation. Photographic apparatus to spread processing fluid in uniform layer. 3,742,834, Cl. 95-13.000.
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Torres, John B., Jr., to Singer Company, The. Student response recording system. 3,742,621, Cl. 35-48.00r.
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Tuckey, Charles H., to Walbro Corporation. Diaphragm carburetor. 3,743,254, Cl. 261-34.00a.
Tulin, Marshall P., to Hydronautics, Incorporated. Blend of vacuum and reverse osmosis fruit juice concentrates. 3,743,513, Cl. 99-105.000.
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Verschoof, Jelis. Device for preventing a body depending from ropes from swinging. 3,743,107, Cl. 212-125.000.

Vial, Theodore Merriam, to American Cyanamid Company. Process for curing carboxylated latex with a co-reactive resin using tetraamminezinc(II) salts. 3,743,612, Cl. 260-2.5ol.

Vianova-Kunstharz A.G.: *See—*
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Vidal, Jean; Lugand, Paul Henri; Lemoine, Jacques; and Parisot, Jean, to Societe General de Constructions Electrique et Mecaniques (Alsthom) and Stein Industrie. Method and means for improving the operation under partial loads of a steam gas plant includin a gas turbine and a stream turbine with a steam generator at the downstream end. 3,742,708, Cl. 60-67.000.

Videon, John A. Transducer beam assembly. 3,743,041, Cl. 177-136.000.

Vidovic, Nikola V., to Singer Company, The. Automatic aperture corrector. 3,743,770, Cl. 178-7.100.

Vieth, George, Jr., to Diamond-Square Industries, Inc., mesne. Anti-skid system and method. 3,743,361, Cl. 303-21.0ch.

Vikoa, Inc.: *See—*
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Vildibill, Alvin J.: *See—*
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Vineland Laboratories, Inc.: *See—*
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Vinton, Clarence Samuel; and Rice, Warren Albert, to Chemotronics International, Inc. Method for the removal of refractory porous shapes from mating formed materials. 3,743,692, Cl. 264-334.000.

Viout, Andre; and Papantoniou, Christos, to Societe Anonyme dite: L'Oreal. Copolymer of N-vinyl pyrrolidone[vinyl ester] unsaturated monobasic carboxylic acid in a hair. 3,743,715, Cl. 424-47.000.

Visser, Peter J., to Clark Equipment Company. Outrigger. 3,743,108, Cl. 212-145.000.

Vogt, Georg: *See—*
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Vogt, Herbert: *See—*
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Vogt, Norman H. Weight scale structure. 3,743,039, Cl. 177-16.000.

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Von Fahland, Jurgen W.: *See—*
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Von Suskil, Robert F., to Wheaton Industries, Inc. Candle holder combination. 3,743,473, Cl. 431-297.000.

vonGimborn, Carl Hans, to Probat-Werke vonGimborn & Co., KG. Apparatus for contacting a free-flowing particulate solid with a fluid. 3,742,613, Cl. 34-109.000.

Voronov, Nikolai Stefanovich: *See—*
Bondarenko, Vitaly Tikhonovich; Markin, Jury Nikandrovich; Voronov, Nikolai Stefanovich; Sagiryants, Nikolai Magdygovich; Salnikov, Ivan Ivanovich; and Petrenko, Konstantin Pavlovich, 3,742,749.

Vossen, John Louis, to RCA Corporation. Method of making a color encoding filter assembly. 3,743,586, Cl. 204-192.000.

Vosteen, Robert E. Electronic system to detect objects in confined volume. 3,744,044, Cl. 340-213.00r.

VSI Corporation: *See—*
Trembley, William Harvey, 3,742,808.

Vysotsky, Vladimir Alexandrovich: *See—*
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Vyzkumny a vyvojovy ustav zavodu vseobecneho strojirenstvi: *See—*
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Wadsworth Electric Manufacturing Company, The: *See—*
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Wafer, John A.; and Borst, John D., to Westinghouse Electric Corporation. Overvoltage protector. 3,743,884, Cl. 315-36.000.

Wagner, Edgar R.: *See—*
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Wagner, Edgar R.; and Gould, Charles W., to Gould, Charles W. and Wagner, Edgar R. Polyamide resin-dye compositions and methods of making the same. 3,743,622, Cl. 260-38.000.

Wagner, Josef. Spray gun. 3,743,188, Cl. 239-575.000.

Wagner, Kuno; and Hajek, Manfred, to Bayer Aktiengesellschaft. Alicyclic nitriles. 3,743,667, Cl. 260-464.000.

Wagner, Siegbert O.: *See—*
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Wait, John D., Jr., to Caterpillar Tractor Company. Air filter mounting assembly. 3,742,684, Cl. 55-385.000.

Wakefield, Orval W., to Pit-Bar Manufacturing Company. Buffer pad with central portion of the working nap removed. 3,742,550, Cl. 15-230.000.

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Walker, Lee R. Pendulum game. 3,743,285, Cl. 273-1.00r.

Waller, Charles R., to Reynolds, R. J., Company. Method and apparatus for treating tobacco. 3,742,961, Cl. 131-138.000.

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Walser, Melvin L.; and Lindly, Ross N., to Clark Equipment Company. Stabilizer and positive ejection mechanism for earth moving apparatus. 3,742,628, Cl. 37-124.000.

Walser, Rudolph; and Givin, William R., to Huyck Corporation. Mounting structure for paper machine drainage foils. 3,743,574, Cl. 162-352.000.

Walter, Lewis A., to Schering Corporation. Substituted benzazepines for producing skeletal muscle relaxation. 3,743,731, Cl. 424-244.000.

Walther, Gerhard; Bauer, Rudolf; Schulz, Werner; and Sirrenberg, Walther, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing tropanol esters of alpha-phenyl-alpha-cyclopentyl-acetic acid and methods of use. 3,743,735, Cl. 424-265.000.

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Watson, William H.: *See—*
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Wayne, Robert Joseph, to United States of America, Navy, mesne. Inclined air core solenoid fields for lasers. 3,743,961, Cl. 331-94.500.

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Webster, Frank G.; and Brooker, Leslie G. S., to Eastman Kodak Company. Polymethine dyes. 3,743,638, Cl. 260-240.400.

Webster, Frank G., to Eastman Kodak Company. Novel dyes containing a substituted 2-pyrazolin-5-one nucleus. 3,743,640, Cl. 260-240.200.

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Weise, Gary V.; Moore, Richard C.; and Sweat, James C., to Newport News Shipbuilding and Dry Dock Company. Method of constructing ships. 3,742,889, Cl. 114-65.00r.
Weiser, Sidney, to Weiser/Robodyne Corporation. Modulation transfer function measurement system and method. 3,743,427, Cl. 356-124.000.
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Weiss, Bruno; and Weiss, Richard. Tube driving apparatus. 3,742,718, Cl. 61-72.700.
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Welanetz, Ludolph F., to United States of America, Navy. Advanced continuous warhead. 3,742,856, Cl. 102-67.000.
Welch, Dean Earl; and Baron, Robert Richard, to Salsbury Laboratories. Nitro-trifluoromethyl-benzanilides for treating coccidiosis. 3,743,745, Cl. 424-324.000.
Welch, William J.: *See*—
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Wenzel, Jorg; and Rieschel, Hans, to Haamann, Josef, Freudenberger Winden- und Hebezeugfabrik. Hydraulic lifting jacks. 3,742,817, Cl. 91-444.000.
Wernsing, Kenneth L. Centered ferrule for holding end loops in wire rope. 3,742,561, Cl. 24-123.00w.
Wesel, Peter E., Jr., to Corning Glass Works. Pipe coupling. 3,743,329, Cl. 285-236.000.
Wessberg, Jacob Erland Magnus; and Astrom, Kjell Edvard Ingmar, to Gotaverkens Angtekniipa AB (Gotaverken Heat Engineering Co. Ltd.). Arrangement for cleaning an air passage in the wall of a refuse burning furnace. 3,742,916, Cl. 122-390.000.
West, Norman Eugene, to Du Pont de Nemours, E. I., and Company. Removal of HF from an HF-containing gas. 3,743,704, Cl. 423-490.000.
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Westine, John R. Method and means for cleansing teeth and their gingival crevices. 3,742,942, Cl. 128-62.00a.
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Wilkins, Ronald D.; and May, Morris B., to ACF Industries, Incorporated. Globe valve having hydraulic balancing. 3,742,984, Cl. 137-629.000.
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Williams, Barbara. Puppet manipulator and puppet-manipulator combination. 3,742,644, Cl. 46-126.000.
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Wise, Robert G., to Cincinnati Milacron Inc. Tracing feed rate control circuit. 3,743,910, Cl. 318-578.000.
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Wisst, Otto; and Haberle, Karl-Heinz, to Eastman Kodak Company. Shutter control apparatus for photographic cameras. 3,742,827, Cl. 95-10.0ce.
Witsenhausenadelman, Robert. Interlocking assembly and method of making same. 3,743,334, Cl. 287-109.000.
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Wolters, Ernst; and Roos, Gunther, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Stabilized polyoxymethylene molding compositions containing a mixture of an alkaline earth metal salt and an ester of (alkylhydroxyphenyl)- carboxyic acids with a polyol. 3,743,614, Cl. 260-18.00r.
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Woo, Peter W. K., to Parke, Davis & Company. 2-Deoxiptreptamine derivative and acid-addition salts. 3,743,634, Cl. 260-210.00s.
Wood, Charles D., III, to Southwest Research Institute. Method of and apparatus for producing a repetitive seismic impulse. 3,744,018, Cl. 340-12.0sd.
Wood, Donald W., to Argus Chemical Corporation. Styrene polymerization with ring substituted alkyl perbenzoates and new branched chain alkyl perbenzoates. 3,743,630, Cl. 260-93.502.
Wood, James M., Jr., to Ethyl Corporation. Preparation of beryllium hydride. 3,743,710, Cl. 423-645.000.
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Woodling, George V. Directly mounted rotary valve on an axial thrust bearing load shaft. 3,743,450, Cl. 418-61.000.
Woods, David H., to Westinghouse Electric Corporation. Shift register. 3,743,858, Cl. 307-221.00r.
Woods, Marion D., to Stoody Company. System for producing valves as for internal-combustion engines. 3,743,815, Cl. 219-76.000.
Woodworth, William H.; and Cunningham, Robert D., to United States of America, Navy. Method of aiming a television guided missile. 3,742,812, Cl. 89-1.50e.
Woolridge, George, to National Distillers and Chemical Corporation. Adapter for coextrusion apparatus. 3,743,460, Cl. 425-131.000.
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Wren, Ruth M. Seam presser. 3,742,882, Cl. 112-217.000.
Wright, Archibald N.; and Merrill, Richard C., to General Electric Company. Coated substrate formed from photopolymerized gas. 3,743,532, Cl. 117-93.310.
Wright, William E., to General Electric Company. Apparatus for producing radiographs of curved planes in an object. 3,743,832, Cl. 250-61.500.
Wulfing, Fritz: *See—*
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Wyatt, Kenneth L., to Western Electric Company, Incorporated. Method and apparatus for conveying paramagnetic elongated articles. 3,742,678, Cl. 53-236.000.
Wyeth, John & Brother Limited: *See—*
Brown, Kevan; and Cavalla, John Frederick, 3,743,656.
Wynne, Ralph A.: *See—*
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Fantuzzo, Joseph, 3,743,409.
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Hutner, Mark A., 3,743,779.
Oriel, George J., 3,742,551.
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Takahashi, Isoji; Sato, Masamichi; and Honjo, Satoru, 3,743,830.
Zucker, Edwin, 3,743,404.
Yajima, Seishi; Hirai, Toshio; Ishikawa, Toshikatsu; and Masuyama, Toshio, to Nippon Carbon Company Limited. Variable resistor. 3,744,000, Cl. 338-150.000.
Yamada, Nobuhiro: *See—*
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Yamagata, Yasufumi. Frequency measuring circuit. 3,743,940, Cl. 324-166.000.
Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Tsjji, Shinzo; and Mitani, Takashi, to Nissan Motor Company, Limited. Vehicular safety device. 3,743,318, Cl. 280-150.0ab.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamamoto, Sigeo: *See—*
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Yamaoka, Goichi, to Kabushiki Kaisha Suwa Seikasha. Reticulate foil and its aperture shape for electric dry shaver. 3,742,603, Cl. 30-346.610.
Yamato, Akihiro: *See—*
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Yamauchi, Shunichi: *See—*
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Yamomoto, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Fluid cooled compression bonded semiconductor device structure. 3,743,893, Cl. 317-234.00r.
Yang, Christen H. C.; and Kinkler, William A., Jr., to Crown Zellerbach Corporation. Process for producing a nonwoven fabric web from a suspension of polyolefin fibers and a hydrophilic colloidal polymeric additive. 3,743,570, Cl. 162-157.00r.
Yano, Osahiko; and Kobayashi, Kukashi, to Matsushita Electric Industrial Co., Ltd. Magnetic tape printer. 3,743,769, Cl. 178-6.60a.
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Yeiser, John O.: *See—*
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Yellin, Bernard. Cage for pets and the like. 3,742,909, Cl. 119-17.000.
Yerman, Alexander J., to General Electric Company. Fine linearity control in integral silicon transducers. 3,743,926, Cl. 323-75.00n.
Yethon, Andrew Edward, to Canadian Industries Limited. Fast dry refinish paints. 3,743,615, Cl. 260-22.0cb.
Yoakum, Marshall: *See—*
Garcia, Joe N., 3,742,518.
Yoder, Worth N.: *See—*
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Yoshida, Kyusaku: *See—*
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Yost, Betty Jane, to Ledex, Inc. Spline for rotary actuator. 3,743,987, Cl. 335t228.000.

Yurasko, George, Jr. Flame spraying. 3,743,533, Cl. 117-105.200.

Zachev, Ivan: *See*—
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Zaffaroni, Alejandro, to Alza Corporation. Bandage for controlled release of vasodilators. 3,742,951, Cl. 128-268.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Kondo, Shinichi; Maeda, Kenji; Takeuchi, Tomio; and Hamada, Masa, 3,743,580.

Zalmer, Richard D. Apparatus for use in playing percussion instruments. 3,742,806, Cl. 84-422.000.

Zamora, Pablo Perez, to Procter & Gamble Company, The. Process for softening fabrics in a dryer. 3,743,534, Cl. 117-109.000.

Zeal Corporation: *See*—
Albertson, Robert V., 3,742,928.

Zeek, Richard M.; and Hetke, Adolf, to General Motors Corporation. Regenerator seal. 3,743,008, Cl. 165-9.000.

Zegers-ten Horn, Henriette J. Projectile game apparatus with tone producing target. 3,742,642, Cl. 46-13.000.

Zemon, Stanley: *See*—
Ganguly, Achintya K.; Zemon, Stanley; and Zucker, Joseph, 3,743,953.

Zenith Radio Corporation: *See*—
Hrbek, George W.; Korpel, Adrianus; and Watson, William H., 3,744,039.
Sobel, Alan, 3,743,773.

Zettl, Herbert; and Siegel, Emil, to Fernseh G.m.b.H. Arrangement for maintaining a constant direct current voltage. 3,743,917, Cl. 321-18.000.

Zhukova, Izida Grigorievna: *See*—
Barkov, Nikolai Konstantinovich; Kucherova, Natalya Fedorovna; Kochetkov, Nikolai Konstantinovich; Zhukova, Izida Grigorievna; and Sharkova, Nina Mikhailovna, 3,743,740.

Zifferer, Kenneth B. Expansion anchor with conically tapered and threaded interacting parts. 3,742,809, Cl. 85-84.000.

Zilberblat, Georg Solomovich. Method of cultivating leishmania. 3,743,579, Cl. 195-80.000.

Zimmermann, Hans; Rudolph, Otfried; and Kuhn, Wilfried, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Sheet turning mechanism for perfectors. 3,742,847, Cl. 101-230.000.

Zimmermann, Wilfried: *See*—
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Zinkin, Harold, to Whittaker Corporation. Weight training device. 3,743,282, Cl. 272-58.000.

Zitelli, William E.; and Winkler, Charles L., to Westinghouse Electric Corporation. Fail-safe detector. 3,743,056, Cl. 187-29.00r.

Zucker, Edwin, to Xerox Corporation. Photoelectrophoretic imaging apparatus including means to simultaneously apply a compressive stress and shear stress to the imaging suspension. 3,743,404, Cl. 355-3.000.

Zucker, Joseph: *See*—
Ganguly, Achintya K.; Zemon, Stanley; and Zucker, Joseph, 3,743,953.

Zulliger, Hans R., to United Scientific Corporation, mesne. Assembly shock mounting and heat coupling system. 3,742,729, Cl. 62-514.000.

Zwahlen, Guenther, to Ciba-Geigy AG. Dry pigment preparations and process for their manufacture. 3,743,526, Cl. 106-193.00r.

Zwald, Frederick K.: *See*—
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., 3,742,565.

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LIST OF REISSUE PATENTEES

TO WHOM
PATENTS WERE ISSUED ON THE 3RD DAY OF JULY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ashworth Bros. Inc.: *See*—
Roinestad, Gerald C., Rodman, and Burnett. Re. 27,690.

Barnes, Andrew F. Beet topping assembly. Re. 27,695, 7–3–73, Cl. 56—121.460.

Borg-Warner Corp.: *See*—
Harlin, Lester E., and Moore. Re. 27,691.

Burnett, John S.: *See*—
Roinestad, Gerald C., Rodman, and Burnett. Re. 27,690.

Harlin, Lester E., W. C. Moore, to Borg-Warner Corp. Oil separator for rotary compressor. Re. 27,691, 7–3–73. Cl. 418—83.

Hawrylo, Frank Z.: *See*—
Kressel, Henry, and Hawrylo. Re. 27,694.

Kressel, Henry, and F. Z. Hawrylo, to RCA Corporation. Semiconductor laser producing light at two wavelengths simultaneously. Re. 27,694, 7–3–73. Cl. 331—94.500.

Moore, Walter C.: *See*—
Harlin, Lester E., and Moore. Re. 27,691.

Motorola, Inc.: *See*—
Schafft, Hugo W. Re. 27,693.

Post, Donald P., to Structomatic, Inc. Roof truss forming machine. Re. 27,692. 7–3–73, Cl. 100—100.

RCA Corporation: *See*—
Kressel, Henry, and Hawrylo. Re. 27,694.

Rodman, John F., Jr.: *See*—
Roinestad, Gerald C., Rodman, and Burnett. Re. 27,690.

Roinestad, Gerald C., J. F. Rodman, and J. S. Burnett, to Ashworth Bros. Inc. Flat wire conveyor belt having slotted bar links. Re. 27,690, 7–3–73. Cl. 198—193.

Schafft, Hugo W., to Motorola, Inc. Variable piezoelectric delay line. Re. 27,693, 7–3–73. Cl. 333—30.

Structomatic, Inc.: *See*—
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A/S W. Jordan Borste & Penselfabrik: *See*—
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Adicks, Cecil F., to Kusan, Inc. Van riding toy. 227,589, 7–3–73, Cl. D34—15.

Airosol Co., Inc.: *See*—
Matthews, John L., Jr. 227,558.

Aktiebolaget Electrolux: *See*—
Domstdet, Johan A., and Klingspor. 227,542.

Alissandratos, Tacko D. Dual support bracket for trash cans. 227,549, 7–3–73, Cl. D8—234.

Allen, Paul E. Combined cigarette holder and ashtray or similar article. 227,614, 7–3–73, Cl. D85—2.

Alps Motorola Co., Inc., The: *See*—
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American Optical Corp.: *See*—
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Amerock Corp.: *See*—
Tegner, Raymond U. H. 227,523.
Tegner, Raymond U. H. 227,548.

Andersen, Neils R.: *See*—
Refsgaard, Niels. 227,532.

Art Steel Co., Inc.: *See*—
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Astle, Brian, to Optel Corp. Font of electroluminescent characters. 227,602, 7–3–73, Cl. D64—12.

Bagguley, Richard B., and C. T. Mascia, to Continental Can Company, Inc. Can or similar article. 227,553, 7–3–73, D9—216.

Bagguley, Richard B., and C. T. Mascia, to Continental Can Company, Inc. Can or similar article. 227,554, 7–3–73, D9—216.

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Bagguley, Richard B., and C. T. Mascia, to Continental Can Company, Inc. Can or similar article. 227,556, 7–3–73, D9—216.

Bagguley, Richard B., and C. T. Mascia, to Continental Can Company, Inc. Can or similar article. 227,557, 7–3–73, D9—216.

Bailey, David C., to General Electric Company. Tone arm. 227,596, 7–3–73, D56—4.

Baron, Stankey N., to Columbia Broadcasting System, Inc. Character font. 227,603, 7–3–73, D64—12.

Bata Shoe Co., Inc.: *See*—
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Beck, Gerald J., and W. C. Bowles, to Minnesota Mining and Mfg. Co. Motion detector. 227,594, 7–3–73, D52—6.

Bereznak, John: *See*—
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Berger, Ute. Cup. 227,531, 7–3–73, D7—5.

Berger, Ute. Napkin ring. 227,536, 7–3–73, D7—72.

Berlin, Hyman L. Cutting blade handle. 227,546, 7–3–73, D8—107.

Better Marketing Industries, Inc.: *See*—
Marks, Paul J., Cooke, Schroll, and Van Noy. 227,560.

Bodan, Howard. Lockable hinged collar to cover steering column ignition lock. 227,547, 7–3–73, D8—113.

Bowkley, Harry T., and J. Diemond, to Coleco Industries, Inc. Pool with integral slide. 227,583, 7–3–73, D34—5.

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Bridges, Roy G. Container for pills or the like. 227,552, 7–3–73, D9—184.

British Box Co., Ltd., The: *See*—
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Burt, Charles M. Hanger for tools and the like. 227,522, 7–3–73, Cl. D6—85.

Callahan, Emmett J. Combined-shower-sauna bathtub unit. 227,569, 7–3–73, Cl. D23—49.

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Carre, Alain, to Societe Le Foyer. Marker pen. 227,611, 7–3–73, Cl. D74—17.

Chambon, Rene, to Societe Francaise d'Equipement Menager. Hand-held hair-dryer. 227,615, 7–3–73, Cl. D86—10.

Cherk, Ester, and G. D. Wyckoff. Toy animal figure. 227,581, 7–3–73, Cl. D34—2.

Chovanec, William, to Art Steel Co., Inc. Stretcher insert for the base of a file rack. 227,526, 7–3–73, Cl. D6—191.

Christell, Charles L. Ring cooking utensil for hamburger patties. 227,533, 7–3–73, Cl. D7—43.

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Cook, William J., to General Electric Co. Portable electric heater. 227,571, 7–3–73, Cl. D23—122.

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Crawford, James J.: *See*—
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Domstedt, Johan A., and C. S. Klingspor, to Aktiebolaget Electrolux. Vacuum cleaner nozzle. 227,542, 7–3–73, Cl. D7—174.

Dushek, Charles D., to Sears, Roebuck and Co. Folding panel system with movable vertical louvers. 227,524, 7–3–73, Cl. D6—139.

Edwards, Peter H., H. R. Geiger, and W. B. Ireland, to Multiron Properties, Inc. Multiple unit townhouse. 227,559, 7–3–73, Cl. D13—1.

Ehret, Gordon F., to Swimquip. Inc. Filter. 227,565, 7–3–73, Cl. D23—4.

Epoch Co., Inc.: *See*—
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Farris, Henry G. Insulated combined food holder and server. 227,537, 7–3–73, Cl. D7—77.

Federation Internationale de Football Association: *See*—
Gazzaniga, Silvio. 227,580.

Field, Martin, and J. Bereznak. Match box holder for fireplace type matches. 227,590, 7–3–73, Cl. D48—28.

Fischer, Kenneth J. Rear view mirror. 227,561, 7–3–73, Cl. D14—6.

Fischer, Richard, to Coronet-Werke Heinrich Schlerf GmbH. Clothes brush with protective case. 227,520, 7–3–73, Cl. D4—17.

Ford, Diana E., to The Metal Box Co. Ltd. Article of flatware. 227,539, 7–3–73, Cl. D7—138.

Ford, Diana E., to The British Box Co. Ltd. Plastic knife. 227,540, 7–3–73, Cl. D7—138.
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Frezzolini, James, and J. J. Crawford, to Frezzolini Electronics Inc. Motion picture camera. 227,601, 7–3–73, Cl. D61—1.
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Heinrich, Oelmann. Curtain fabric. 227,591, 7–3–73, Cl. D47—6.
Heymann, Richard C., IV. Telephone security device. 227,575, 7–3–73, Cl. D26—14.
Himmel, Mitchell A. Blender top or similar article. 227,541, 7–3–73, Cl. D7—154.
House Mates Inc.: *See*—
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Huggins, Ellie J., to Pretty Products, Inc. Bath mat. 227,529, 7–3–73, Cl. D6—210.
Hutzler, Lothar, to Hutzler Mfg. Co. Grater. 227,534, 7–3–73, Cl. D7—47.
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Inouye, Tadao E. Frame for a seat or similar article. 227,527, 7–3–73, Cl. D6—191.
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Kanitz, Emeric, to Cannon Mills Co. Towel or similar article. 227,617, 7–3–73, Cl. D92—26.
Kanitz, Emeric, to Cannon Mills Co. Bedspread or similar article of bed linen. 227,618, 7–3–73, Cl. D92—2.
Katoh, Akira, to General Electric Co. Housing for a combined radio and calendar or similar article. 227,595, 7–3–73, Cl. D56—4.
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Lauderback, Stephen K., to Sunbeam Corp. Nozzle for hair dryer. 227,616, 7–3–73, Cl. D86—10.
Lindbo, Per, to A/S W. Jordan Borste & Penselfabrik. Head and handle for a toothbrush. 227,521, 7–3–73, Cl. D4—25.
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Mason, Terry D. Cassette holder. 227,612, 7–3–73, Cl. D87—1.
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Monte, Ernest, to Sunbeam Lighting Co. Ceiling mounted fluorescent light fixture. 227,593, 7–3–73, Cl. D48—23.
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Noyes, Eliot F., to International Business Machines Corp. Copying machine or the like. 227,600, 7–3–73, Cl. D61—1.
O'Donnell, Thomas P. Holder, and the like for drainers on pails and other articles. 227,550, 7–3–73, Cl. D8—246.
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Carre, Alain. 227,611.
Sony Corp.: *See*—
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CLASS 2
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CLASS 4
1 3,742,520
10 3,742,522
110 3,742,523
180 3,742,521
286 3,742,524
288 3,742,525

CLASS 5
12 3,742,526
63 3,742,527
91 3,742,528
110 3,742,532
118 3,742,529
331 3,742,530
348WB 3,742,531

CLASS 7
1G 3,742,533

CLASS 8
39 3,743,476
66 3,743,477
114.6 3,743,478
151.2 3,743,479

CLASS 9
1T 3,742,534
8P 3,742,536
8R 3,742,535
308 3,742,539
340 3,742,538
400 3,742,540

CLASS 10
141R 3,742,541

CLASS 11
1R 3,742,542

CLASS 12
142MC 3,742,543
142RS 3,742,544

CLASS 13
9 3,743,749
12 3,743,752
25 3,743,753

CLASS 15
31 3,742,545
50R 3,742,546
104A 3,742,547
104.3SN 3,742,548
167R 3,742,549
230 3,742,550
256.51 3,742,551

CLASS 16
42 3,742,552
55 3,742,553
124 3,742,554
128 3,742,555

CLASS 17
37 3,742,556

CLASS 21
2 3,743,480

CLASS 23
230B 3,743,482
277R 3,743,481
303 3,743,483
306 3,743,484

CLASS 24
33B 3,742,557
68D 3,742,558
73 3,742,559
81HS 3,742,560
123W 3,742,561
263DH 3,742,563
263DK 3,742,562

CLASS 29
105R 3,742,565
132 3,742,566
157.3B 3,742,567
195.5 3,743,485
200P 3,742,568
3,742,569
201 3,742,570
203MM 3,742,574
203D 3,742,564
203H 3,742,571
3,742,573
203P 3,742,572
208F 3,742,575
211R 3,742,576
212R 3,742,577
214 3,742,579
401 3,742,580
407 3,742,581
3,742,584
413 3,742,583
419 3,742,578
421 3,742,582
423 3,742,585
430 3,742,586
434 3,742,587
458 3,742,588
523 3,742,590
525 3,742,591
574 3,742,592
3,742,598
577 3,742,589
583 3,742,593
588 3,742,599
592 3,742,594
3,742,600
596 3,742,595
3,742,596
611 3,742,601
625 3,742,597

CLASS 30
340 3,742,602
346.61 3,742,603

CLASS 32
5 3,742,604
17 3,742,605
22 3,742,606
33 3,742,607
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CLASS 33
143M 3,742,609
172F 3,742,610

CLASS 34
8 3,742,611
9 3,742,612
109 3,742,613
147 3,742,614
229 3,742,615

CLASS 35
8R 3,742,616
10.2 3,743,754
25 3,742,618
30 3,742,619
31D 3,743,750
41 3,742,620
48R 3,742,621
48 3,742,617

CLASS 36
2.5AM 3,742,622
4 3,742,623
7.3 3,742,624
11.5 3,742,625
28 3,742,627

CLASS 37
43R 3,742,626
124 3,742,628

CLASS 38
69 3,742,629
100 3,742,630

CLASS 40
106.53 3,742,631
128 3,742,632
133B 3,742,633
359 3,742,634

CLASS 42
1R 3,742,635
1S 3,742,636
25 3,742,638
76R 3,742,640

CLASS 43
19 3,742,637
42.39 3,742,639

CLASS 44
51 3,743,486

CLASS 46
4 3,742,641
13 3,742,642
74D 3,742,643
126 3,742,644
242 3,742,645
243LV 3,742,875

CLASS 48
57 3,743,487
214 3,743,488

CLASS 49
28 3,742,646
35 3,742,647
74 3,742,648
441 3,742,649

CLASS 51
5 3,742,650
9 3,742,651
73R 3,742,652
165.9 3,742,653
206R 3,742,654
238S 3,743,490
307 3,743,489
356 3,742,655
376 3,742,656

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3,742,658
19 3,742,659
79 3,742,660
98 3,742,661
122 3,742,662
145 3,742,663
194 3,742,664
221 3,742,666
235 3,742,667
284 3,742,665
288 3,742,668
396 3,742,669
506 3,742,670
507 3,742,671
594 3,742,672
624 3,742,673
666 3,742,674
721 3,742,675

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26 3,742,677
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79 3,742,679

CLASS 55
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119 3,742,681
223 3,742,682
261 3,742,683
385 3,742,684

CLASS 56
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12.9 3,742,686
119 3,742,687
121.46 Re.27,695
193 3,742,688
226 3,742,689
259 3,742,691
313 3,742,690

CLASS 57
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51.6 3,742,696
58.86 3,742,693
132 3,742,694
157TS 3,742,695

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107 3,742,700

CLASS 60
39.23 3,742,702
39.31 3,742,704
39.32 3,742,703
39.66 3,742,705
3,742,706
59T 3,742,707
67 3,742,708
106 3,742,709
220 3,742,710
226R 3,742,711
258 3,742,701
294 3,742,712
325 3,742,713
484 3,742,714

CLASS 61
.5 3,742,716
1 3,742,715
53.52 3,742,717
72.7 3,742,718

CLASS 62
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17 3,742,720
37 3,742,721
225 3,742,722
293 3,742,723
331 3,742,724
419 3,742,725
476 3,742,726
3,742,727
3,742,728
514 3,742,729

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2 3,742,730
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32 3,743,492
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126 3,743,494
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CLASS 66
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50R 3,742,733

CLASS 68
5D 3,742,734
3,742,735
23.5 3,742,736
177 3,742,737
210 3,742,738

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38B 3,742,739
58 3,742,740
63 3,742,741
78 3,742,742
209 3,742,743
358 3,742,744

CLASS 71
21 3,743,496
66 3,743,497
88 3,743,498

CLASS 72
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68 3,742,747
166 3,742,748
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249 3,742,751
273 3,742,752
340 3,742,753
402 3,742,754

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88.5R 3,742,757
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141A 3,742,759
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228 3,742,762
343R 3,742,763
362AR 3,742,764
398AR 3,742,765
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517B 3,742,767

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5R 3,742,769
5.34 3,742,770
10.6 3,742,771
18.2 3,742,772
53 3,742,773
89.15 3,742,774
242.3 3,742,777
245R 3,742,775
251S 3,742,776
395 3,742,778
448 3,742,779
568R 3,742,780
625 3,742,781
688 3,742,782
710.5 3,742,783
3,742,784
860 3,742,785

CLASS 75
.5BB 3,743,499
68 3,743,500
109 3,743,501
135 3,743,502

CLASS 81
52.5 3,742,786
61 3,742,787
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12 3,742,794
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298 3,742,798
391 3,742,801
431 3,742,799
451 3,742,802
471.3 3,742,803
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637 3,742,804
662 3,742,805

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1.01 3,743,755
3,743,756
1.03 3,743,757
1.16 3,743,751
422 3,742,806
3,742,810
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32R 3,742,808
84 3,742,809

CLASS 86
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CLASS 89
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1.87 3,742,813

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11C 3,742,815
13.1 3,742,816

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490 3,742,818
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497 3,742,820
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CLASS 92
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10CE 3,742,827
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3,742,831
10CT 3,742,826
3,742,830
10FS 3,742,829
11R 3,742,824
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12 3,742,833
13 3,742,834
86 3,742,835
89R 3,742,836

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3 3,743,504
48R 3,743,505
73 3,743,506
81 3,743,507
87R 3,743,508
91R 3,743,509
123 3,743,510
124 3,743,517

CLASS 98
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CLASS 99
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91 3,743,512
105 3,743,513
109 3,743,514
116 3,743,515
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159 3,743,519
171B 3,743,520
176 3,743,521
181R 3,743,522
217 3,743,523
389 3,742,838
421HV 3,742,839
421A 3,742,840
589 3,742,841

CLASS 100
35 3,742,537
100 Re.27,692
212 3,742,842

CLASS 101
41 3,742,843
93C 3,742,844
3,742,845
3,742,846
3,742,848
220 3,742,849
230 3,742,847
248 3,742,850
295 3,742,851
378 3,742,852
401.1 3,742,853

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64 3,742,855
67 3,742,856
70.2R 3,742,858
101 3,742,859
702SA 3,742,857

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96 3,742,861
148MS 3,742,862
172BT 3,742,863
173 3,742,864

CLASS 105
282R 3,742,865
360 3,742,866
366D 3,742,867

CLASS 106
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74 3,743,525
193R 3,743,526
309 3,743,527

CLASS 108
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64 3,742,869
150 3,742,870
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CLASS 109
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CLASS 110
8A 3,742,874
8R 3,742,873
176 3,742,876

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6 3,742,877

CLASS 112
121.12 3,742,878
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210 3,742,881
217 3,742,882

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24 3,742,883

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.5R 3,742,884
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61 3,742,886
3,742,887
65R 3,742,889
66.5H 3,742,890
67A 3,742,888
208R 3,742,891
235R 3,742,892

CLASS 115
12R 3,742,893
15 3,742,894
34 3,742,895

CLASS 116
34R 3,742,896
63P 3,742,897
70 3,742,898

CLASS 117
9 3,743,528
21 3,743,529
63 3,743,530
76P 3,743,531
93.31 3,743,532
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109 3,743,534
114R 3,743,535
138.5 3,743,536
215 3,743,537
221 3,743,538

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6 3,742,900
8 3,742,901
37 3,742,903
48 3,742,904
50 3,742,902
63 3,742,905
105 3,742,906
314 3,742,907

CLASS 119
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17 3,742,909
27 3,742,910
28 3,742,911
51 3,742,912
51.11 3,742,913
52 3,742,914

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32 3,742,915
390 3,742,916

CLASS 123
8.05 3,742,917
32EA 3,742,918
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3,742,920
90.16 3,742,921
97B 3,742,922
119B 3,742,923
119R 3,742,924
139AQ 3,742,925
139DP 3,742,926
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198DC 3,742,928

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19R 3,742,930
133 3,742,929
369 3,742,931

CLASS 127
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3,742,938
2.06R 3,742,947
2.08 3,742,939
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76C 3,742,943
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218F 3,742,948
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268 3,742,951
278 3,742,952
295 3,742,953
302 3,742,954
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349B 3,742,959

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143 3,742,962
258 3,742,963

CLASS 132
118 3,742,964

CLASS 134
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2 3,743,541
31 3,743,542
92 3,742,965

CLASS 135
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CLASS 136
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86R 3,743,544
114 3,743,545

CLASS 137
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85 3,742,969
100 3,742,970
106 3,742,971
110 3,742,972
172 3,742,974
331 3,742,975
516.29 3,742,976
557 3,742,977
565 3,742,978
625.2A 3,742,979
625.47 3,742,983
625.62 3,742,980
625.63 3,742,981
625.68 3,742,982
629 3,742,984
819 3,742,967

CLASS 138
141 3,742,985

CLASS 139
12 3,742,986
127P 3,742,973

CLASS 140
147 3,742,987

CLASS 141
2 3,742,988
371 3,742,989

CLASS 144
2Z 3,742,990
3D 3,742,991
246R 3,742,992
248 3,742,993

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6.27 3,743,547
6.3 3,743,551
12.7 3,743,549
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32 3,743,548
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188 3,743,553

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11 3,743,554
36 3,743,555

CLASS 150
.5 3,742,995
1 3,742,994

CLASS 152
225 3,742,996
233 3,742,997
427 3,742,998

CLASS 156
62.8 3,743,556
72 3,743,557
73 3,743,558
177 3,743,559
181 3,743,560
192 3,743,561
378 3,743,562
391 3,743,563
394 3,743,564
476 3,743,565
499 3,743,566
553 3,743,567

CLASS 157
1.28 3,742,999
1.33 3,743,000

CLASS 160
41 3,743,044
105 3,743,001
126 3,743,002

CLASS 161
68 3,743,568
225 3,743,569

CLASS 162
157R 3,743,570
203 3,743,571
246 3,743,572
336 3,743,573
352 3,743,574

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18 3,743,004
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281 3,743,007

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22 3,743,010
38 3,743,011
39 3,743,012

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.5 3,743,013
69 3,743,014
113 3,743,015
120 3,743,016
249 3,743,017
275 3,743,018
276 3,743,019
292 3,743,020
311 3,743,021

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29R 3,743,055

CLASS 169
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CLASS 171
5 3,743,023
61 3,743,024

CLASS 172
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13 3,743,027
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21 3,743,025
34 3,743,029
513 3,743,031
803 3,743,032

CLASS 173
4 3,743,033
124 3,743,030

CLASS 174
15C 3,743,760
15R 3,743,759
52R 3,743,761
71B 3,744,002
75C 3,743,748
146 3,743,762

CLASS 175
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317 3,743,035
330 3,743,036
334 3,743,037
341 3,743,038

CLASS 176
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78 3,743,578

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136 3,743,041
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5.6 3,743,767
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6.8 3,743,765
3,743,768
7.1 3,743,770
7.2 3,743,771
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7.3S 3,743,774
7.3 3,743,773
88 3,743,775

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1SA 3,743,787
1VS 3,743,783
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15BM 3,743,785
15BP 3,743,786
15BY 3,743,789
18BC 3,743,790
81B 3,743,791
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100.2CA 3,743,794
100.2MD 3,743,793

CLASS 180
6.2 3,743,043
69R 3,743,045
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111 3,743,047

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53 3,743,048

CLASS 182
2 3,743,049
9 3,743,050
15 3,743,051
93 3,743,052

CLASS 184
1.5 3,743,053
14 3,743,054

CLASS 187
29R 3,743,056
3,743,057
3,743,058

CLASS 188
1B 3,743,059
72.2 3,743,060
170 3,743,061
212 3,743,062
218R 3,743,063

CLASS 191
2 3,743,795
12.2A 3,743,796

CLASS 192
3R 3,743,064
20 3,743,065
41A 3,743,066
43 3,743,067
84C 3,743,068
107M 3,743,069
113R 3,743,070

CLASS 195
80R 3,743,580
80 3,743,579
103.5R 3,743,581
141 3,743,582

CLASS 197
1A 3,743,071
6.4 3,743,072
55 3,743,073

CLASS 198
19 3,743,074
33AB 3,743,076
33R 3,743,075
110 3,743,077
121 3,743,078
193 Re.27,690
3,743,079
220BA 3,743,080

CLASS 200
1R 3,743,797
5R 3,743,798
6B 3,743,799
50A 3,743,800
61.25 3,743,801
61.45R 3,743,803
61.47 3,743,802
148B 3,743,804
167A 3,743,805
3,743,806
172A 3,743,807

CLASS 204
27 3,743,583
52R 3,743,584
112 3,743,585
192 3,743,586
3,743,587
195L 3,743,591
195M 3,743,588
195R 3,743,589
212 3,743,590
266 3,743,592

CLASS 206
1R 3,743,081
3,743,082
7H 3,743,083
12 3,743,088
42 3,743,084
3,743,085
52R 3,743,086
56AB 3,743,087
65B 3,743,089

CLASS 208
55 3,743,593
216 3,743,594

CLASS 209
73 3,743,091
74 3,743,090
3,743,092
80 3,743,093

CLASS 210
23 3,743,595
3,743,596
3,743,597
49 3,743,598
78 3,743,094
84 3,743,095
232 3,743,096
321 3,743,097
3,743,098
333 3,743,099
386 3,743,100
447 3,743,101
490 3,743,599
512 3,743,102
532 3,743,103

CLASS 211
60 3,743,104
123 3,743,106
153 3,743,105

CLASS 212
125 3,743,107
145 3,743,108

CLASS 213
43 3,743,109
76 3,743,110
212 3,743,111

CLASS 214
6DK 3,743,113
6S 3,743,112
7 3,743,118
8.5H 3,743,114
16.4A 3,743,115
16.4R 3,743,116
17DA 3,743,117
3,743,119
38BA 3,743,120
44R 3,743,121
3,743,122
89 3,743,123
338 3,743,124
515 3,743,125
776 3,743,126

CLASS 215
9 3,743,127
43 3,743,128
46A 3,743,129

CLASS 219
10.41 3,743,808
10.57 3,743,809
10.67 3,743,810
10.69 3,743,811
60A 3,743,812
67 3,743,813
76 3,743,814
3,743,815
86 3,743,816
121EB 3,743,776
121LM 3,743,777
156 3,743,778
216 3,743,779
288 3,743,780
378 3,743,782
383 3,743,781

CLASS 220
9R 3,743,130
24.5 3,743,131
31 3,743,132
60R 3,743,133

CLASS 221
2 3,743,134
205 3,743,135
213 3,743,136
289 3,743,137

CLASS 222
1 3,743,138
3,743,139
63 3,743,140
67 3,743,141
145 3,743,143
146HE 3,743,142
180 3,743,144
400.7 3,743,145
446 3,743,146

CLASS 224
26R 3,743,147

CLASS 225
2 3,743,148
3,743,149
9 3,743,150
47 3,743,151

CLASS 226
19 3,743,152
91 3,743,153
113 3,743,154
171 3,743,155
181 3,743,156
195 3,743,157

CLASS 227
8 3,743,158
10 3,743,159
100 3,743,160
124 3,743,161

CLASS 228
2 3,743,162

CLASS 229
15R 3,743,163
17 3,743,164
3,743,165
23BT 3,743,167
23R 3,743,166
28R 3,743,168
31R 3,743,169
33 3,743,170
40 3,743,171
55R 3,743,172
68 3,743,173

CLASS 233
26 3,743,174

CLASS 234
30 3,743,175

CLASS 235
50A 3,743,176
51 3,743,177
60MT 3,743,178
61.11E 3,743,820
61.11F 3,743,819
61.11J 3,743,817
61.5R 3,743,818
64.7 3,743,821
92C 3,743,822
150.1 3,743,823
175 3,743,824

CLASS 236
1C 3,743,180
15A 3,743,179
44R 3,743,181
78 3,743,182

CLASS 239
264 3,743,183
265.19 3,743,184
265.27 3,743,185
413 3,743,186
489 3,743,187
575 3,743,188
579 3,743,189

CLASS 240
2MA 3,743,825
9A 3,743,826
10R 3,743,827
3,743,828
153 3,743,829

CLASS 241
4 3,743,190
73 3,743,191
101B 3,743,192
207 3,743,193

CLASS 242
27 3,743,194
45 3,743,202
55 3,743,196
55.01 3,743,195
56.6 3,743,197
58.6 3,743,198
65 3,743,199
67.3R 3,743,200
67.3 3,743,201
68.4 3,743,203
68.5 3,743,204
68.7 3,743,205
75.1 3,743,206
84.21A 3,743,207
118.6 3,743,208
118.61 3,743,209
125.1 3,743,210
130.2 3,743,211
197 3,743,212

CLASS 244
2 3,743,214
3.1 3,743,213
3.14 3,743,215
3.16 3,743,216
3,743,217
36 3,743,218
42CA 3,743,219
3,743,220
77A 3,743,221
104FP 3,743,222

CLASS 248
2 3,743,223
23 3,743,224
27.8 3,743,225
156 3,743,226
210 3,743,227
228 3,743,228
394 3,743,229
399 3,743,230
452 3,743,231

CLASS 249
34 3,743,232
121 3,743,235
150 3,743,236
202 3,743,233
203 3,743,234

CLASS 250
61.5 3,743,832
83.3D 3,743,834
83.3H 3,743,835
99 3,743,836
206 3,743,837
219DF 3,743,838
273 3,743,841
320 3,743,842
3,743,843
325 3,743,830
334 3,743,844
336 3,743,840
360 3,743,845
425 3,743,831
474 3,743,846
483 3,743,833
510 3,743,847

CLASS 251
25 3,743,237
111 3,743,239
118 3,743,238
129 3,743,240
138 3,743,241
152 3,743,242
197 3,743,244
257 3,743,245
288 3,743,243
367 3,743,246

CLASS 252
62 3,743,601
62.1 3,743,682
95 3,743,600
110 3,743,602
180 3,743,603
316 3,743,604
350 3,743,605
373 3,743,606
430 3,743,607
500 3,743,608
501 3,743,609
527 3,743,610

CLASS 254
89 3,743,247
93R 3,743,248
172 3,743,249

CLASS 259
4 3,743,250
18 3,743,251
107 3,743,340
191 3,743,252

CLASS 260
2.5B 3,743,611
2.5L 3,743,612
17.4ST 3,743,613
18R 3,743,614
22CB 3,743,615
27BB 3,743,616
3,743,617
27R 3,743,618
29.3 3,743,619
32.6NR 3,743,620
37N 3,743,621
38 3,743,622
45.85S 3,743,623
47CP 3,743,624
75N 3,743,625
77.5AQ 3,743,626
78.4D 3,743,627
88.2S 3,743,628
93.5S 3,743,629
93.5W 3,743,630
94.7N 3,743,631
152 3,743,632
210S 3,743,634
210.5 3,743,633
219D 3,743,839
239.3P 3,743,635
239.55R 3,743,636
240C 3,743,637
240D 3,743,639
240.2 3,743,640
240.4 3,743,638
243C 3,743,644
244R 3,743,641
247.5 3,743,646
249.6 3,743,642
249.8 3,743,643
293.74 3,743,645
294.8D 3,743,647
294.8K 3,743,648
304 3,743,649
306.8D 3,743,650
307C 3,743,651
308R 3,743,652
309 3,743,653
326.5FM 3,743,654
332.2A 3,743,656
332.3P 3,743,655
340.5 3,743,657
343.5 3,743,658
345.2 3,743,659
397.2 3,743,661
397.5 3,743,660
409 3,743,662
413 3,743,663
453PC 3,743,664
453SP 3,743,665
464 3,743,666
3,743,667
465E 3,743,668
465.6 3,743,669
487 3,743,670
488R 3,743,671
497A 3,743,672
504R 3,743,673
540 3,743,674
543F 3,743,675
551P 3,743,676
563D 3,743,677
566F 3,743,681
573 3,743,678
609D 3,743,680
609R 3,743,679
680 3,743,683
681.5R 3,743,684
860 3,743,685
861 3,743,686
948 3,743,687
970 3,743,688

CLASS 261
34A 3,743,254
35 3,743,253
79R 3,743,255
98 3,743,256
112 3,743,257
142 3,743,258

CLASS 264
69 3,743,272
92 3,743,689
178F 3,743,690
334 3,743,692
340 3,743,693
343 3,743,694

CLASS 266
23K 3,743,259
3,743,260
24 3,743,261
32 3,743,262
34A 3,743,263
36H 3,743,265
36P 3,743,264

CLASS 267
31 3,743,266
160 3,743,268
164 3,743,269

CLASS 269
14 3,743,270
37 3,743,271

CLASS 270
3,743,273

CLASS 271
3 3,743,274
10 3,743,275
24 3,743,276
58 3,743,277

CLASS 272
31A 3,743,279
32 3,743,278
56.5R 3,743,281
57R 3,743,280
58 3,743,282
70 3,743,283

CLASS 273
1R 3,743,284
3,743,285
1.5R 3,743,286
5B 3,743,287
6 3,743,288
25 3,743,289
50 3,743,290
85C 3,743,291
95R 3,743,292
130R 3,743,293
149P 3,743,294
178B 3,743,295
185D 3,743,296
193A 3,743,297
204 3,743,298

CLASS 274
4B 3,743,301
4C 3,743,299
4J 3,743,300

CLASS 277
10 3,743,302
27 3,743,303
3,743,304
37 3,743,305
187 3,743,306

CLASS 279
91 3,743,307

CLASS 280
11.35C 3,743,310
11.35T 3,743,308
3,743,309
11.37Z 3,743,311
47.18 3,743,312
47.37 3,743,313
124B 3,743,314
124R 3,743,315
150AB 3,743,318
150SB 3,743,319
150B 3,743,317
150R 3,743,316
166 3,743,320
202 3,743,321
400 3,743,322

CLASS 282
23R 3,743,323

CLASS 285
3 3,743,324
94 3,743,325
105 3,743,326
192 3,743,327
226 3,743,328
236 3,743,329

CLASS 287
52.08 3,743,333
53R 3,743,331
54A 3,743,332
60 3,743,330
74 3,743,267
109 3,743,334

CLASS 290
55 3,743,848

CLASS 292
127 3,743,335
173 3,743,336

CLASS 294
1CA 3,743,337
19A 3,743,338
19R 3,743,339
74 3,743,341
86.31 3,743,342

CLASS 296
1S 3,743,343
20 3,743,344
23MC 3,743,346
23R 3,743,345
35R 3,743,347

CLASS 297
85 3,743,348
3,743,349
94 3,743,350
107 3,743,351
285 3,743,352
445 3,743,353

CLASS 299
1 3,743,354
12 3,743,355
18 3,743,356
22 3,743,357
40 3,743,358

CLASS 302
2R 3,743,359
36 3,743,360

CLASS 303
21CH 3,743,361
21F 3,743,362
3,743,363
54 3,743,364

CLASS 307
10R 3,743,849
32 3,743,850
88LC 3,743,851
109 3,743,852
116 3,743,853
147 3,743,854
215 3,743,855
216 3,743,856
221R 3,743,858
235R 3,743,857
251 3,743,862
252UA 3,743,860
252B 3,743,861
252K 3,743,859
296 3,743,863
302 3,743,864
308 3,743,865

CLASS 308
3.8 3,743,366
26 3,743,365
122 3,743,367
187.2 3,743,368
201 3,743,369

CLASS 310
4 3,743,866
8.1 3,743,868
8.4 3,743,869
13 3,743,870
52 3,743,867
90 3,743,871
3,743,872
165 3,743,873
178 3,743,874
198 3,743,875

CLASS 312
7R 3,743,370
42 3,743,371
108 3,743,372
257SK 3,743,373
319 3,743,374

CLASS 313
11.5 3,743,877
85S 3,743,878
108B 3,743,879
109.5 3,743,880
217 3,743,881

CLASS 315
13C 3,743,882
21 3,743,883
36 3,743,884
82 3,743,885
83 3,743,886

CLASS 316
20 3,743,375

CLASS 317
16 3,743,887
3,743,888
27R 3,743,889
101CP 3,743,890
119 3,743,891
120 3,743,892
154 3,743,898
234R 3,743,893
3,743,894
3,743,895
3,743,896
235R 3,743,897
3,743,899

CLASS 318
52 3,743,900
87 3,743,901
138 3,743,902
162 3,743,904
207A 3,743,903
227 3,743,905
254 3,743,906
271 3,743,907
282 3,743,909
327 3,743,913
345 3,743,908
578 3,743,910
599 3,743,911
3,743,912

CLASS 320
1 3,743,914
2 3,743,915

CLASS 321
3,743,916
3,743,920
18 3,743,917
44 3,743,918
69R 3,743,919

CLASS 323
4 3,743,921
22R 3,743,923
22T 3,743,924
75N 3,743,926

CLASS 324
19 3,743,922
28RS 3,743,927
29.5 3,743,931
34E 3,743,934
37 3,743,928
58R 3,743,925
61R 3,743,930
73R 3,743,939
96 3,743,929
140D 3,743,932
166 3,743,940

CLASS 325
24 3,743,933
51 3,743,935
55 3,743,936
3,743,937
67 3,743,938
305 3,743,941
337 3,743,942
453 3,743,943
471 3,743,944

CLASS 328
28 3,743,945
110 3,743,946
117 3,743,947
119 3,743,948
144 3,743,949
151 3,743,950
181 3,743,951

CLASS 329
110 3,743,952

CLASS 330
4.6 3,743,953
10 3,743,954
22 3,743,955
31 3,743,959
40 3,743,956
85 3,743,957
149 3,743,958

CLASS 331
1A 3,743,960
94.5H Re.27,694
94.5 3,743,961
3,743,962
3,743,963
3,743,964
3,743,965
101 3,743,966
107R 3,743,967
116R 3,743,968

CLASS 332
7.51 3,743,969
3,743,970
38 3,743,971

CLASS 333
1.1 3,743,972
17 3,743,974
18 3,743,975
30R Re.27,693
3,743,973
79 3,743,978
3,743,979

CLASS 334
47 3,743,976

CLASS 335
23 3,743,981
205 3,743,980
208 3,743,982
210 3,743,983
212 3,743,984
3,743,985
216 3,743,986
228 3,743,987
272 3,743,988

CLASS 336
5 3,743,989
192 3,743,990
217 3,743,991

CLASS 337
48 3,743,992
77 3,743,977
114 3,743,993
159 3,743,994

CLASS 338
15 3,743,995
21 3,743,996
49 3,743,997
96 3,743,998
118 3,743,999
150 3,744,000

CLASS 339
14R 3,744,001
31B 3,744,003
74R 3,744,004
75MP 3,744,005
97R 3,744,006
3,744,007
103B 3,744,008
128 3,744,009
157R 3,744,010
177R 3,744,011
246 3,744,012

CLASS 340
3D 3,744,015
3R 3,744,013
3T 3,744,014
7R 3,744,016
8 3,744,017
12SD 3,744,018
3,744,020
15.5GC 3,744,019
15.5TC 3,744,021
52R 3,744,022
146.1AB 3,744,024
146.1F 3,744,023
146.3Z 3,744,025
3,744,026
147MD 3,744,027
172.5 3,744,028
3,744,029
3,744,030
3,744,031
3,744,032
3,744,033
3,744,034
3,744,035
173CA 3,744,037
173LM 3,744,039
173R 3,744,036
173.1 3,744,038
174BC 3,744,041
174TF 3,744,042
174.1F 3,744,040
213R 3,744,043
3,744,044
248R 3,744,045
253R 3,744,046
259 3,744,047
324R 3,744,048
336 3,744,049
347DA 3,744,050
347DD 3,744,051

CLASS 350
3.5 3,743,376
37 3,743,377
150 3,743,378
3,743,379
152 3,743,380
159 3,743,381
160 3,743,382
170 3,743,383
184 3,743,384
189 3,743,385
214 3,743,386
215 3,743,387
220 3,743,388
288 3,743,389
314 3,743,390

CLASS 352
5 3,743,391
17 3,743,392
84 3,743,393
100 3,743,394
103 3,743,395
109 3,743,396
129 3,743,397
157 3,743,398

CLASS 353
23 3,743,399
26 3,743,400
52 3,743,401

CLASS 355
3 3,743,402
3,743,403
3,743,404
3,743,405
8 3,743,406
10 3,743,407
3,743,408
13 3,743,409
15 3,743,410
17 3,743,411
18 3,743,412
29 3,743,413
52 3,743,414
3,743,415
56 3,743,416
125 3,743,417

CLASS 356
5 3,743,418
3,743,419
28 3,743,420
71 3,743,421
3,743,422
3,743,423
73 3,743,424
87 3,743,425
96 3,743,426
124 3,743,427
160 3,743,428
180 3,743,429
207 3,743,430
239 3,743,431

CLASS 373
7 3,743,876

CLASS 404
84 3,743,432

CLASS 408
72 3,743,433

CLASS 415
30 3,743,434
163 3,743,435
181 3,743,436
197 3,743,437
204 3,743,438
206 3,743,439

CLASS 416
84 3,743,440
143 3,743,441

CLASS 417
12 3,743,442
68 3,743,443
92 3,743,444
220 3,743,445
240 3,743,446
360 3,743,447
570 3,743,448

CLASS 418
39 3,743,449
61 3,743,450
3,743,451
83 Re.27,691
84 3,743,452
88 3,743,453
248 3,743,454

CLASS 423
8 3,743,695
10 3,743,696
165 3,743,691
166 3,743,725
175 3,743,697
292 3,743,698
322 3,743,700
359 3,743,699
386 3,743,701
443 3,743,702
446 3,743,703
490 3,743,704
561 3,743,705
588 3,743,706
594 3,743,707
617 3,743,708
628 3,743,709
645 3,743,710
646 3,743,711

CLASS 424
1 3,743,712
3,743,713
3,743,714

47	3,743,715	177	3,743,726	265	3,743,735	330	3,743,746	148	3,743,461	458	3,743,470
49	3,743,716	181	3,743,727	267	3,743,736	333	3,743,747	192	3,743,462		CLASS 431
65	3,743,717	200	3,743,728		3,743,737		CLASS 425	195	3,743,463	115	3,743,471
84	3,743,718	225	3,743,729		3,743,740			222	3,743,464	274	3,743,472
	3,743,719	242	3,743,741	270	3,743,738	78	3,743,455	245	3,743,465	297	3,743,473
88	3,743,720	243	3,743,730	273	3,743,739	112	3,743,456	326	3,743,466		CLASS 432
95	3,743,721	244	3,743,731	300	3,743,743	113	3,743,457	387	3,743,467	8	3,743,474
98	3,743,722	250	3,743,732	317	3,743,744	122	3,743,458	429	3,743,468	16	3,743,475
120	3,743,723		3,743,734	319	3,743,742	131	3,743,459	450	3,743,469		
122	3,743,724	251	3,743,733	324	3,743,745		3,743,460				

CLASSIFICATION OF DESIGNS

D 2—	179	227,518		64	227,535		184	227,552		49	227,569		227,586		227,603
	309	227,519		72	227,536		216	227,553		122	227,571		227,587	D71— 1	227,604
D 4—	17	227,520		77	227,537			227,554	D25—	1	227,572	15	227,588		227,605
	25	227,521		85	227,538			227,555			227,573		227,589		227,606
D 6—	85	227,522		138	227,539			227,556			227,574	D47— 6	227,591	D72—	227,607
	97	227,523			227,540			227,557	D26—	13	227,577	D48— 20	227,592		227,608
	139	227,524		154	227,541		253	227,558		14	227,570	23	227,593		227,609
	172	227,525		174	227,542	D13—	1	227,559			227,575	28	227,590		227,610
	191	227,526		193	227,543			227,560			227,576	D52— 6	227,594	D74— 17	227,611
		227,527	D 8—	98	227,544	D14—	6	227,561			227,578	D56— 4	227,595	D85— 2	227,614
		227,528			227,545	D19—	1	227,562			227,579		227,596	D86— 10	227,615
	210	227,529		107	227,546	D22—	19	227,563	D29—	28	227,580	D57— 1	227,597		227,616
	244	227,530		113	227,547		31	227,564	D34—	2	227,581	D60—	227,598	D87— 1	227,612
D 7—	5	227,531		144	227,548	D23—	4	227,565		5	227,582	D61—	227,599		227,613
	9	227,532		234	227,549		28	227,566			227,583		227,600	D92— 2	227,618
	43	227,533		246	227,550			227,567			227,584		227,601	26	227,617
	47	227,534	D 9—	18	227,551		29	227,568			227,585	D64— 12	227,602	D97— 3	227,619

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Frederick B. Dent, *Secretary*